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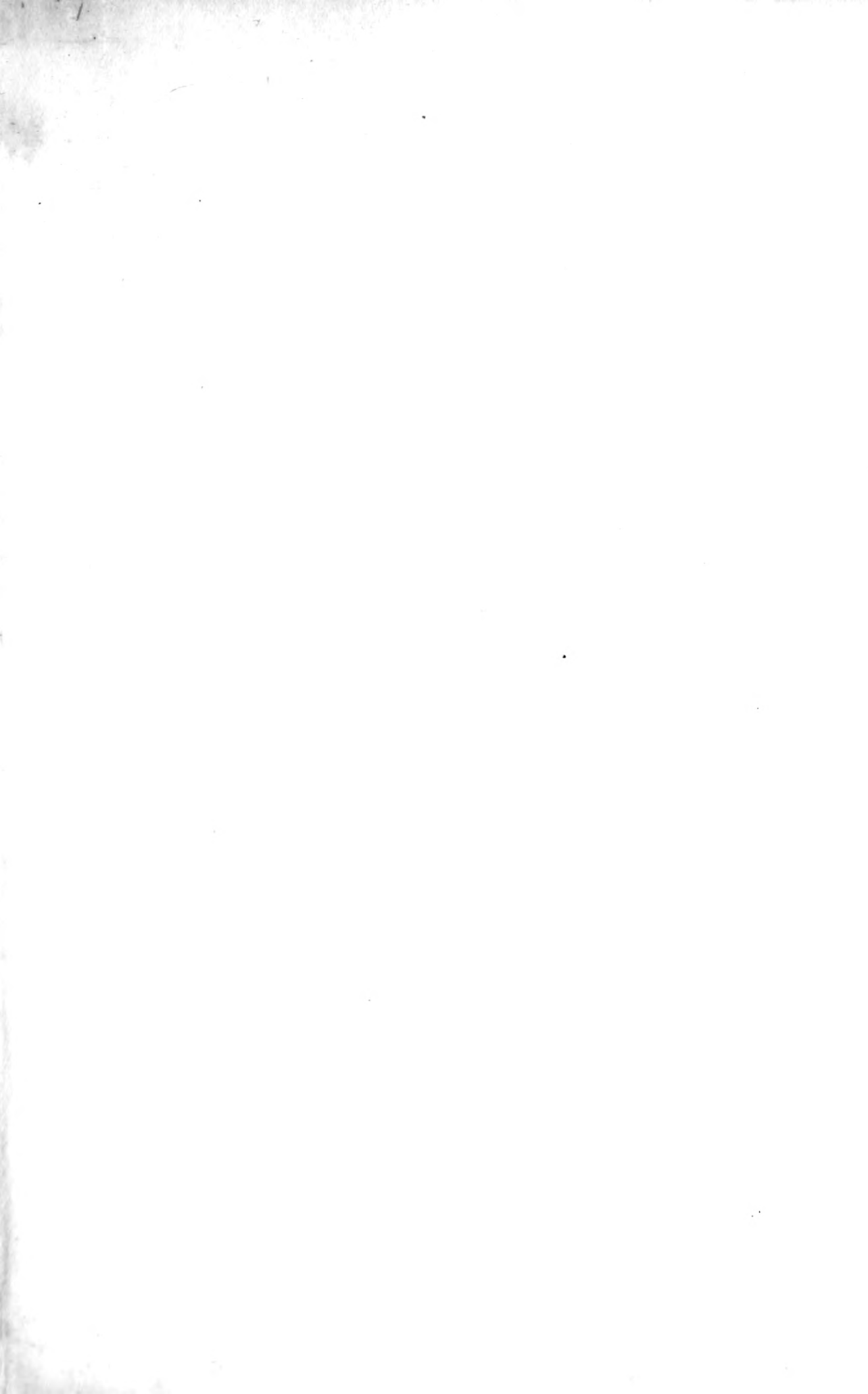


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DOMINION DENTAL JOURNAL

(Official Organ of all Dental Associations in Canada.)



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VOLUME XXVIII

DOMINION DENTAL JOURNAL

RICHMOND AND SHEPPARD STREETS, TORONTO.

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Dominion Dental Journal

VOL. XXVIII.

TORONTO, JANUARY 15, 1916.

No. 1.

Original Communications

SYSTEMIC DISORDERS AS THE RESULT OF ORAL SEPSIS

ANDREW J. McDONAGH, D.D.S., L.D.S., Toronto, Ont.

Read before Clifton Springs Sanitarium,
Clifton Springs, N.Y.

In order to understand this subject and its development up to the present time, we must make ourselves familiar with the history of medicine and dentistry of the last twenty or twenty five years. Up to that time except in a vague, uncertain sort of way, there was no idea or connection between the condition of the mouth and of the system generally.

Dentists who were observant, and we find that in every profession, medicine, dentistry or what not, that there are only a few observant individuals or at most, only a few observant individuals who tell us of their observations. Those who were observant, I say, in this profession, noticed that there was some connection between certain constitutional disturbances and mouth conditions. Fortunately, I believe, for the whole human race, there were some five or six dental surgeons in the city of London, England, who made it their business to impress upon everyone who seemed to have the interests of humanity at heart, particularly upon the physicians, the seriousness, as they saw it, of this septic chain. One of the physicians of this class, Dr. Hunter, was and is attached to one of the large hospitals in London. It is not necessary for me to say here the part Dr. Hunter has taken in bringing this matter before the world and particularly before the dental and medical professions. It has been said that Dr. Hunter is an extremist, that he attributes all ills of the human body to some septic foci in the mouth, and as a consequence many of his statements have been discredited.

There is no doubt that Dr. Hunter has made some statements and has condemned some dental operations in this country, without being able to substantiate what he has said; nevertheless, in my experience it were better far to take an extreme stand in this controversy than to ignore the facts so plainly put before us, every day in our practise.

At the risk of being a little tedious, I desire to go into this phase of the question as briefly as possible. Leaving out of the question, ptomaines and toxins, there are two ways by which micro-organisms bred in the mouth and in structures composing the mouth, can do a patient harm. One is by being absorbed into or forced to penetrate oral tissues and thereby find their way directly into the blood stream and the other is by being discharged into or cultured in the mouth cavity, taken as a result into the stomach and carried on into the intestines. Each of these conditions will have its own peculiar results.

Now, we will consider the organisms which are either cultured in or discharged into the mouth. You who have tried, know that it is absolutely impossible to remove micro organic life from the mouth, many of the organisms found there are intended by nature to be there, they are benign non-pathogenic organisms and will not brook the introduction of foreign strains provided the anatomy of the parts are kept intact. It is quite easy for one who has what we might call Bacteriophobia, to go to excess in his doctrines and practices concerning the organisms of the mouth, without doubt we have here the rather stylish failing of pathologists of to-day.

If we have not thoroughly familiarized ourselves with the subject we are apt to condemn gold crowns and bridges because there may be some particular part of the crown or bridge which is difficult to reach for cleaning purposes. No doubt if one could have the mouth absolutely clean all of the time, one would have a sense of comfort and righteousness and feel as it is ordinarily expressed, hygienic. But notwithstanding that fact, millions of healthy people in the world to-day have not the power nor the implements to keep all of the surfaces of their natural teeth perfectly clean, and the surfaces on those bridges and crowns which are not kept absolutely clean are no larger and of no greater menace to the health of the patient than are the surfaces on the natural teeth which I just spoke of.

There is a class, however, of both crowns and bridges which are exceedingly dirty and a very great menace to the health of the individual. It would take too long in a paper of this kind to make technical distinction and it is difficult for me in a few words to designate where the difference lies. One very great distinction, however, which I would make and which will be a guide to us is this, that if food pabulum which is splendid breeding ground for organisms is packed against the gum tissue and allowed to lie there undisturbed, it is very apt to cause a pathological condition of that gum tissue and the absorption of micro organisms and their products, because the irritation of that foreign material on the gum makes the gum an absorbing surface. We must also note in this connection that any crevice or space partly covered by the gum tissue covered in such a way that it is not freely washed by the saliva will almost surely be a breeding ground for pathogenic

micro-organisms. It is absolutely necessary that we should have the full detergent action of the fluids of the mouth.

Dr. Edward Rosenow has shown you can change the physical qualities of bacteria by the change of environment, you can make the streptococcal bacteria into a diplococcus and give the organism certain prescribed attributes and you can transmute one organism into more than one different form of organism. It is also an established fact that you can transform benign organisms into pathogenic organisms by changing their environment and pabulum. Taking note of these facts it is not at all drawing upon our imagination, when we take it for granted that the ordinary organisms found in the mouth when carried through the tissues till they are placed at the apices or ends of the roots would change completely their habits and attributes. Just along this line it is interesting to note, however, that the latest investigations on this subject go to show that in those apical abscesses and in the deep pyorrhoea pockets, the Streptococcal and not the Staphylococcal forms are invariably encountered, and according to Hartzell, in apical abscesses the Streptococcus Veridans habitually predominates.

In this same connection, Hartzell, who is investigating for the Original Research Committee of the National Dental Association has told us many things which have upset our preconceived ideas and which seem to contradict teachings heretofore given, but which explain several phenomena not heretofore explained.

One very strange and also illuminating fact disclosed is this: If a tooth has an abscess encompassing the end of the root, which is apparently encysted, at the end of the roots of the teeth immediately adjoining that tooth, although the teeth are alive and perfectly healthy, will be found the same micro-organisms as are contained in the abscess, showing that the micro-organisms have penetrated the walls of the abscess and invaded the contiguous tissues, showing also a probable avenue into the circulation. Now, the harm which may be done if these organisms enter the circulation either by this avenue or any other avenue which we will speak of later on, may be done either by destroying the blood itself; in other words, by haemolyzing it, or the harm may be done by the blood stream carrying these organisms to distant parts of the body, where they will find congenial habitation, notably in the heart, the joints and cellular tissue. There is a great difference in opinion between pathologists as to the proportion of alveolar abscesses which contain haemolytic organisms, Hartzell claiming that in his investigations only one in two hundred abscesses contained haemolytic organisms. This great difference of opinion possibly is accounted for by the different manner in which investigators culture their organisms, but in my experience there is this to say, if the organism in a blind abscess is a haemolytic organism, the abscess is much smaller and much more difficult to find by X-ray. This probably is due to the difference in the pyogenic qualities of the two organisms.

In making and reading radiographs our difficulties are enhanced, because an abscess caused by an infected pulp canal does not always form at the end of a root, does not always form in a position easily detected in a skiagram; in other words, the root very often hides the abscess, and your only guide is the condition of the lineadura and your knowledge of the appearance a healthy root ought to have. This is exceptionally true of the molars on which the abscess often forms at the bifurcation of the roots, and is an exceedingly virulent abscess. A man to make a diagnosis should never absolutely rely upon his skiagram; he must use either thermal changes or high pressure electric current, or both, to help in his work. Just one word more about abscesses on the teeth. It is not unusual for a man examining a patient's mouth to base his diagnosis on that which is most apparent, namely, sinuses and visible concretions. Nothing in this field is more deceiving or more disappointing. Multiple abscesses discharging through sinuses into the mouth are not as bad as one abscess (so-called blind abscess) which has no sinus, the whole contents of which must be absorbed by the surrounding tissue, and we must not forget that in this case the surrounding tissue is composed of highly vascular cancellous bone.

These blind abscesses very often, in fact, in the majority of cases, do not cause any great discomfort to the patient; the teeth are not sore, the gums are not swollen, and if you make a single X-ray plate of all the teeth and the jaws of the mouth you may not discover the abscess. Another fact which is sometimes overlooked is that organisms contained at the end of the different teeth roots in the mouth may be, and very often are, as different as possible in different localities in the same mouth; that is, you may have at the end of one of the centrals a non-haemolytic streptococcus veridans, and at the end of a bicuspid root a haemolytic streptococcus, and so on, consequently every root and every abscess sac must be made sterile.

Much has been said and written about the injurious effect of pyorrhoea (so-called); in other words, of a suppurative condition in the mouth, causing a breaking down of the tissues surrounding the teeth, the better term for which, and a more modern term, being suppurative dental periclasia.

Now, how much worth is to be attached to all the stories we hear of this condition? That depends upon our knowledge and what we mean by our terms. With the superficial study of this condition it is hard for one to understand how any individual afflicted with extensive dental periclasia can live and not have general septicemia. I have seen, and I see every day, people afflicted with this disease who have apparently large areas of absorbing surfaces, and often they do not seem to be seriously affected. It is not an uncommon thing to find twenty to thirty pockets from one-eighth of an inch to one-half an inch deep around the teeth of an individual. Measure the circumference of the teeth and take an average depth of three-eighths of an inch (and this is not uncommon); measure a number for example; take 25 of these pockets and you will have an area of, say, ten square

inches bathed in pus. We all know what the effect would be in any other part of the body if we had one-half, or one-third, of that area bathed in pus.

But we have another factor to take into consideration in studying conditions in the mouth, and that is, that during mastication not only are those surfaces bathed in pus, but there is direct pressure caused by the action of the food, driving this poisonous material into the tissues.

I will try to explain as well as I can why it is we do not always have immediate blood poisoning from this condition, and why under certain circumstances we do have very serious septicæmia as a result of suppurative periclasia. These pockets filled with pus that I spoke of some time ago running down the root of the teeth one-eighth or one-quarter of an inch, as the case may be, are not always unprotected surfaces. Nature has provided a meed of protection, in that the mucous membrane extends down as the breaking takes place sometimes nearly to the bottom of the pocket, lining it, at least partially so, consequently the exposed absorbing tissue is immensely less than it appears to be on casual examination, and thereby we have great protection. Then again, at the bottom of the pocket, where the tissue is broken, Nature throws out millions of leukocytes to fight back the invading army of organisms, as you will see in the picture we will throw on the screen in a moment or two.

But if the process of forming these pockets is rapid, if the tissues break down quickly and the granulation tissue has not a chance to be covered by the mucous membrane, you will immediately have great absorption and general septicæmia, as you will also in certain localities where the anatomical conditions are favorable, such as the distal part of the mouth, between the molars, where the bone is wide and the gum septum entirely destroyed. In this position and under these conditions you will always get a dangerous absorbing surface.

Now, I do not want to be understood to say that the pus exuding from these pockets and also pouring into the month through the sinuses is not a menace to the health of the individual; it would be nonsense to pretend that one whose every mouthful of food was impregnated with pus was as well as one who swallowed no pus at all; but what I do say is this, that a small amount of micro-organic life or ptomaines or toxins forced directly into the blood circulation is far more dangerous than three times the same amount taken into the stomach.

I am going to take a few of the many thousand cases which have come under my care in the last thirty years, and describe as briefly as I can the symptoms, conditions, treatment and result.

We will first take a couple of cases of periodontoclasia, or so-called "pyorrhoea."

The first one—Mr. —, of Orillia, a lumber merchant—always used to outdoor work, and perfectly healthy until the year 1911, when his

health began to fail, his appetite left him, he became exceedingly nervous, developed indigestion, lost rapidly in weight, and had to give up business. Being a man of means, he consulted several good physicians, who evidently did not think of examining his mouth. He was referred to me by his dentist. I found pus formation around the roots of thirty teeth in his mouth, the average depth of the pocket being three-eighths of an inch. I treated the case, got immediate healing, and also immediate recovery of his general health in every particular. Mr. L—— moved out to Edmonton, and has gone into the lumber business again, where he has made a great deal of money.

Mrs. L——, age about 46, wife of a prominent barrister—suffered from asthma, could not sleep in bed for weeks at a time. Referred to me by her physician. I found pus pockets on most of her teeth; the infection was eliminated; result, immediate recovery. This was in October, 1913; no further trace of asthma until February, 1915, when it again recurred in a milder form. I found a re-infection around three of the teeth, treated them, and again symptoms have disappeared.

In these cases, as in every case treated for dental periclasia, there is a gaining in weight after treatment.

One girl who had been losing weight rapidly regained twenty-five pounds in two months.



No. 1.

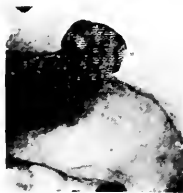
No. 1. Mr. C——, age about 43. Came to a Toronto hospital suffering from "shortness of breath"; was sent to me for diagnosis. When he came in he was exceedingly weak; could not walk two blocks nor ascend the shortest flight of stairs. Made an examination of his mouth and found a number of his teeth had abscesses, one particularly large abscess encompassing the lower incisors. Had incisors extracted, and had a dentist open up and treat the other teeth which were abscessed. Had a careful examination made of him by Dr. R——, who found his heart badly affected. After the extraction and treatment of the teeth he made a rapid recovery, and is apparently to-day perfectly normal.

No. 2. Miss R——, Oshawa. Sent by Dr. F——, her physician. Had "pyorrhoea" pockets and two roots with small abscesses. One tooth was extracted and the other tooth treated. When she first came the joints of her hands were stiff and infiltrated, so she could not close one hand, nor could she raise her hand to her head. In five months she re-

turned and could easily swing her arms over her head, and her hands closed quite normally.



No. 2.



No. 3.

No. 3. Mr. S——, druggist, age about 45. Sent to me by Dr. R——. Suffered with periodical attacks of iritis; attacks progressed until he was not able to see. Was treated for syphilis some time; changed his physician and went to Dr. R——, who decided he had no syphilis. I examined case; made radiograph; found necrosed bone surrounding an old infected root. Had root and necrosed part of bone removed. He regained his sight, and the iritis disappeared within three days, and did not return during his lifetime.



No. 4

No. 4. Miss K——, patient of W. Wright. Came to Dr. Wright for pain and swelling in the fingers and feet, and stiffness in the joints in general. X-rays were taken of the intestinal tract, by Dr. Wright, and also of the teeth. It was found necessary to extract all of the teeth with the exception of the lower front six. Within ten days after the teeth were removed much of the stiffness had left the body, and the hands could be completely closed, which she had not been able to do for seven years. It is interesting to learn that previous to this treatment this patient always experienced what she called seasickness while travelling in a train for any distance. This also has entirely left her.



No. 5.

No. 5. Miss S——, age about 28. Sent by her physician, Dr. H——, for examination. Her knee was swollen so that she could not walk,

and was getting progressively worse. By help of the X-ray I diagnosed the trouble coming from her teeth. Dr. H—— sent her to Dr. Price, who opened up root canals, and by ionization destroyed germs in the pus sacs. Immediate improvement, swelling disappeared, can now walk two or three miles without inconvenience.



No. 6.

No. 6. Mrs. S——, Perth. Suffering from anaemia, and her local physicians could not find any cause. Her dentist and a patient whom I had treated referred her to me. Had teeth X-rayed on September 27th, and found a number of abscesses. Had two teeth extracted and the others treated. On November 11th her husband writes that her general condition has improved wonderfully. I received a letter a day or two ago which I have with me, in which she says: "I am enjoying better health than for years."



No. 7.

No. 7. Mr. H——. Was in the sanitarium suffering, or supposed to be suffering, from tuberculosis; had a temperature every day of from 101 to 103. Came to Toronto for a holiday, having slightly improved in weight. Was referred to me by his dentist. The X-ray disclosed abscesses on his teeth, so he was sent back to his dentist. Had the fillings removed from the defective teeth and roots treated. Immediately his temperature and all pathological symptoms left him. He was all right for eight months; then he came in one day and said he was having a feeling as if he were flushed, and believed he was again developing a temperature. I sent him to his dentist, who found the pulp in another tooth had died and become septic. This was attended to, and immediately all symptoms disappeared.

No. 8. Miss S——. Case of anaemia. Came on about four years ago. Was attacked with twitching of the muscles and the lower limbs; used to cry over the nervous strain of having to sit still; was sleepless and without strength to rise until noon. Had crown removed and root treated; also treated her for periodontitis; put her gums in healthy condition; they were in the habit of bleeding. Blood test taken after starting

treatment for teeth, then again shortly after, had improved 35 counts. Gums and nose have stopped bleeding; formerly it was necessary to keep a towel folded on the pillow. Has gained in weight about ten pounds, twitching in muscles and limbs has stopped completely, she now has sound, refreshing sleep. November 19th, 1915, Miss Strachan came in to-day; perfect health.



No. 8.



No. 9.

No. 9. Mrs. McL———. Great pain in back and stiffness in muscles; could not rotate her head nor turn it from side to side; exceeding pains in back, knotting of muscles in the calves of the legs, and general stiffness in the joints. Her home physician diagnosed her condition as a result of curvature of the spine. The osteopathic physician at the sanitarium where she went diagnosed her case as enlargement of the liver. Another physician diagnosed her case as floating kidney, and sent her to Dr. F. L. S———, a noted surgeon in Toronto, to be operated on. Dr. F. L. S——— differed in his diagnosis, as he found all the organs of her body practically normal excepting her teeth. He asked her to have a couple which were very bad extracted, and to come and see me, which she did. After X-raying her mouth I had five more teeth extracted, made a culture from the end of the root of one of them, from which a vaccine was prepared; had the other teeth in her mouth which were amenable to treatment put in proper shape. Sent the vaccine to her local physician to be injected. Result: Two days after the first teeth were extracted she was able to move her head normally. Persistently improved in health, and as she expressed it the other day when she was in, she was able to pick up her thirty-pound baby with ease and spank her. However, she says there are sometimes yet slight pains in her back.

Added to above the fact that Dr. Hartzell has reported the increase of red blood corpuscles from nine hundred thousand to two million six hundred and thirty thousand in three weeks after dental treatment, and numerous investigators have found the blood pressure always materially decreased after the elimination of septic foci from the mouth. With these and many other corroborative reports along this line, is it not surprising that we have been so slow in grasping the significance of these local focal conditions?

ABSCESS OF THE ANTRUM

E. C. McDONALD, D.D.S., Toronto, Ont.

A CASE OF A PATIENT THIRTY YEARS OF AGE.

An upper left first molar was filled with a large amalgam filling some ten or fifteen years ago with no apparent trouble until four years ago, when a violent infection of the peridental membrane developed and lasted several days. Unfortunately no further treatment was given at that time, and at intervals of a few months the attack recurred, usually being warded off by counter-irritation. After several attacks had come and gone the pain in the tooth area was followed by gnawing pain up through the cheek bone or superior maxillæ. About nine months ago one of those attacks, which usually lasted two or three days, was followed by a very foul and offensive discharge of a yellow pus-like substance into the throat through the posterior naries. This was accompanied by chills and fever, which also accompanied the previous attacks slightly. But this all cleared away again in about a week. In August last another attack of gnawing pain starting about the tooth came on, and also in the cheek, and in a day or so the same offensive discharge into the throat. This time it was persistent. There was a dull, heavy feeling under the eye, with a little pain at times, and the tooth lame all the time. The cheek bone was sore to press upon, and the soft tissues slightly swollen. Patient chilled easily, and fever was present constantly, but never very high. A little work took a lot of exertion. Diagnosis—Transillumination showed almost black in region of antrum. X-ray showed abscess at apicies of roots of tooth with rarification towards antrum. On opening into canals a solution could be forced through apicies of roots through antrum and nose and posterior naries into throat accompanied by some offensive discharge. The tooth was extracted and the antrum washed out with saline solution. The irritation subsided at once, but there seems to be a tendency to recurrence.

A BETTER KNOWLEDGE OF DENTAL PATHOLOGY DESIRABLE

F. H. KRUEGER, D.D.S., L.D.S., Toronto, Ont.

The necessity of better understanding of Dental Pathology by those attempting treatment of disturbances of dental origin is again brought to light in the case of a young lady about twenty-one years of age, presenting a discharging sinus over the upper left lateral and central incisors, both teeth much darkened in color, the root canals filled with pus and the following story:—

In 1909 had some fillings, extractions and upper six anterior teeth regulated. The following year had a swelling over the upper lateral incisor, which developed into an abscess and was lanced by the family physician, other abscesses followed at different times, relieving themselves except one, which was particularly distressing and received the same attention as the first. After a year of this, patient was in general poor health, lost considerable weight and abscesses formed on different parts of the body. In 1912 an operation was performed on the upper jaw but "nothing was found wrong." Six months suppurative process commenced again. Patient was taken to hospital for operation, remaining one week; later, on account of wound not "healing from the bottom" was again opened to "promote proper granulation" and was as successful as could be expected with the original foci of infection, the lateral and central incisor roots filled with infective material, left unattended.

DIAGNOSIS.—Dento alveolar abscess with sinus and resorption of bone at the apices of the lateral and central incisors as shown by radiograph.



CAUSE.—Death and infection of pulp of the lateral, followed by the same process in the central incisor.

PROGNOSIS.—Cause was referred for consultation with the conclusion that recovery could reasonably be expected if the root canals and abscess tract be thoroughly sterilized and canals properly filled.

TREATMENT.—Teeth opened, drained of pus, mechanically cleaned and dressed with formo-cresol. The next visit, with dental abscess syringe sterile water was forced through each canal out through the common sinus, this followed with a weak antiseptic solution, the canals thoroughly dried and a dressing of formo-cresol sealed in with cement. The next day the same process was repeated except in the central canal which could not be flushed with reasonable effort and was left with a dressing of modified formo-cresol. This process of flushing the lateral with weak antiseptic solution and dressing with formo-cresol was continued three more times at intervals of one, two and three days, the third time dressing both canals with phenol compound and a week later filling the canals after the fashion of Dr. Callahan's method.

The sinus having healed owing to the removal of the cause.

AN ANTRUM CASE OF LONG STANDING

A. E. WEBSTER, M.D., D.D.S.

Male—Family history good, except for a general tendency to mucous membrane irritations. Father and mother lived close to the four score and ten mark. Father subject to attacks of acute rhinitis, which completely blocked nasal breathing for days at a time. These attacks were less frequent and less violent as years advanced. One brother has attacks of acute rhinitis from dust or cold winds.

The patient from childhood subject to attacks of severe colds, accompanied with coryza, sore throat and bronchitis. At twelve years of age he had an attack of rhinitis, which was followed by acute pain in the superior maxillary region, having a violent effect on the left eye. The pain began about nine o'clock each morning for five days, and left about twelve o'clock. None of the home remedies had any effect on the pain. There was no history of fever. The attending physician gave large doses of quinine, which indicated that he suspected malaria.

It was some years before there was another attack. The next attack had the same peculiar periodicity, coming at a definite time of day, and absolute freedom between attacks. This attack, like the last one, or, for that matter, all of them, followed an acute rhinitis. This attack was thought to be the preliminary pain of an approaching typhoid fever, and the patient was sent a journey of five hundred miles to his home. The pain stopped in a few days and all was well again.

The next attack was about five years later, and as before followed a severe cold. The opinion this time was that the eyes were defective, and glasses were recommended, but were never worn, because the pain went away and didn't return for several years.

Attacks became more frequent, and at times a more or less constant discomfort was felt in the left side of the face and head. On the occasion of each severe attack the eyes, ears, nose, throat and teeth were examined without discovering anything more than an irritable mucous membrane. The pain was was latterly ascribed to neuralgia, rheumatism, arteriosclerosis, eating too much meat, etc. The nose and throat were washed with disinfectants, the eyes tested again and again, teeth extracted, pulps devitalized, tonsils examined, large doses of drugs administered, but when the pain came nothing would stop it.

The attacks came on rather suddenly, and seemed in some way associated with mental effort or over use of the eyes in a strong light. Tears poured from the eyes, and a watery fluid from the nose. The left nostril was completely closed to air passage. The cheek did not become flushed. There was little or no temperature. The nerve openings were sensitive during an attack, but not afterwards. Deep pressure on the face was

painful. Pressure over the buccal roots of the upper molars was painful. The hair and surface of the scalp was sore to the touch. In fact, the full distribution of the fifth nerve was involved. The pain was prostrating in character.

During one of the later attacks there was discharged from the nose a jelly-like mass, somewhat discolored from a previous hemorrhage which had lasted fifteen or twenty minutes. At this time the rheonologist discovered a much swollen superior turbunated and recommended its removal, with the suggestion that it looked much like a neoplasm. Another rhionologist after taking the history, said "that sounds like a sinus trouble," transillumination showed a dark left antrum. This fact was known to the patient for years, but attached no significance to it. A catheter was passed into the natural opening of the antrum and water slowly forced into the cavity. Masses of a grayish jelly-like substance came out in such quantities as to indicate that the antrum had been completely filled. This material seemed soft and yet took somewhat of the form of the cavity it filled. A second washing was done in a few days, which cleared up the last vestige of pain and discomfort. The swollen turbunated bone has gone back to place, and breathing is as free on that side as the other.

These cases are very rare and seldom become infected. The mucous membrane seems to exfoliate into the cavity and not drain away, and when an excessive amount of fluid swells up the mass and the membrane thickens the pressure is enough to bulge into the eye and the other walls of the sinus. Pressure is the chief cause of the symptoms, and when it relieves itself the pain stops.

It is known as "rhinitis casiosum."

AMALGAM TECHNIQUE

To insure accuracy, at convenient times the operator or assistant can weigh into capsules ten and fifteen grains of alloy, and into other capsules the necessary proportions of mercury. These capsules are ready for immediate use without inconvenience or loss of time; and the use of the alloy in definite quantities will result in great saving of material, because the operator soon learns the amount required for any particular cavity.

If the operator will learn to use only such excess mercury as is necessary to make a perfect mix, such procedure will result in the ideal condition of plasticity of the amalgam essential to the most perfect and stable adaptation, avoiding the necessity of adding or removing mercury during the mixing, which is very inaccurate and uncertain, and will be found a common cause of those bulk changes which sometimes follow the use of most reliable alloys.

Mixing.—Proper mixing is best done by the use of a deep glass mortar, the inner surface of which has been dulled (not ground), and a pestle of such design as to afford a firm grasp being taken of the handle. The head of the pestle should also be slightly dulled.

The time required and the rapidity of movement of the pestle necessary for thorough amalgamation make the use of a shallow mortar impracticable, because of the danger of loss of some of the contents during the operation.

A rough inner surface of the mortar tends to grind the alloy, which is objectionable, to say nothing of the extreme difficulty in completely removing the plastic mass and keeping the mortar clean.

A complete mix is absolutely essential to a stable filling, and this cannot be accomplished in the mortar and hand in less time than two and a half to three minutes. The mixing in the mortar should continue for two minutes, and from half to one minute in the hand, by the watch, using only moderate force, rather slowly at first to avoid losing some of the mercury, working rapidly after the filings have absorbed the mercury.

The excess mercury should be removed during the packing of the cavity instead of during the final kneading. As a result of this procedure the consistency of the mass should be plastic, as it is necessary to avoid any sound of crepitus or any indication of setting during the filling of the first half of the cavity, for the more completely the cavity is filled while the mass is in this very plastic condition the better the result in adaptation.

Packing.—Pack each piece of amalgam with a large flat serrated plugger, taking short steps, working from the centre to and around the walls, inclining the plugger in such a manner as to pack against the walls, using all force of the pen grasp. As the excess mercury is expressed to the surface during the packing, scrape it off with the side of the plugger, repeating the operation with each piece of amalgam added. In angular

and irregular cavities a small angular plugger must be used with force and thoroughness around all walls and in all angles.

The cavity should be filled to excess, and the thumb may be placed over the entire filling, compressing the amalgam against all margins, at the same time removing the surplus mercury. The filling should now remain undisturbed for about three minutes, after which time it can be trimmed to form and lightly burnished to the margins, and polished at a subsequent sitting.

Time and rapidity of movement in the mixing are essential. If the filling be done in the manner described reasonably uniform results may be obtained, and such procedure will allow the maximum time for the filling of the cavity.

The time of mixing suggested may sometimes be advantageously increased, but should never be less than the minimum stated. In medium and average large cavities adaptation cannot be secured with a reasonable degree of success unless the amalgam mass be in a very plastic state, free of sound of crepitus or any indication of setting during the insertion of most of the filling.

Plasticity and compression (using an alloy that hardens sufficiently to remain fixed immediately upon the removal of the surplus mercury) are vital factors essential to secure a non-leaking filling.

The only practical way of securing this necessary extreme plasticity in the high grade alloys that are sufficiently strong in their resistance to crushing stress and flow, is not to remove the excess mercury during the final kneading. The extra plasticity of the mass, a result of this procedure, will permit of perfect adaptation, as it remains sufficiently fluid to retain its continuity as it is compressed against the walls and into the angles, hardening immediately with the removal of the excess mercury making a filling of the maximum density.

The necessity for compression prohibits the use of smooth ball burnishers for the packing. Such instruments may, by thorough manipulation, eliminate the defects shown, but fillings so made generally leak immediately when air pressure is applied, and their resistance to crushing stress and flow is much reduced.

In all cavities that will permit their use a large flat serrated faced plugger that will grasp and hold the amalgam under the packing force should be used to secure the maximum compression.

A TRIP IN WAR TIMES

A. W. THORNTON, D.D.S., L.D.S., Montreal, Que.

Just as we turn to enter the Thames, a friend standing by me says, "Did you ever see a submarine?" I answer in the negative, and he says "Well, just look over there on the port bow," and I turn and out some distance I see the much talked of "periscope." But we are assured that, from its position, it must be British, and as it takes no notice of us, we come to the conclusion that she has no evil designs on us. It has been a trying, anxious day, and many a thanksgiving is breathed as we drop anchor, and a tender comes alongside at Tilbury.

A special train takes us to St. Pancras station, and our "unchecked" baggage is thrown in a promiscuous pile on the platform. This may be a good way to handle baggage—it must be good, because the people of Britain stick to it so tenaciously—but if those plutocrats who are responsible for it, could, just once, listen to the lurid, variegated, diversified and picturesque profanity which their system, or lack of system, produced—well—the English would keep right on in the same old way. The oldest inhabitant has never known an instance where a British corporation has ever been coaxed, cajoled, forced or bullied into changing a "system" once it has been established: witness, the Horse Guards, the War Office, their system of heating their homes, and their facilities for taking a "bawth."

As I am travelling light, my suit case, club bag and box of hospital stuff are soon found (with the help of a porter) and a taxi soon lands me at my hotel, tired, dirty, hungry, sleepy and ill-tempered, at one o'clock in the morning. After registering, the clerk (a lady) passes me a printed sheet and asks me to "fill that out please." My name, my age, my height, my weight, my nationality, my financial standing, all have to be given, before I could be assigned a room. Then I was taken up in the lift and shown to my room.

With the door locked, I took a survey, and the first thing to attract attention was a card about "eight by ten" with printed instructions telling what to do in case of a Zeppelin raid. Besides the card was a candle and a box of matches.

In case of a raid we were "to get out of bed, light the candle (all electric lights would be cut off) and make our way to the lower floor." All blinds were to be kept lowered, and no lights of any kind were to be kept in the room after retiring. These precautions, of course, conduced to soundness of sleep—but in spite of them, I turned in, and was soon in the arms of Morpheus.

Next morning I made my way to the office of the French Consul, thinking all I had to do was to produce my passport and take passage

to France. But—no such luck. I am told that being British I will have to obtain leave from the British passport office, and thither I go. A decent British official (there are some very far from being decent) tells me that it will be very difficult to obtain permission to go into the war zone, and I am now convinced he knew what he was talking about.

But why dwell on the efforts I put forth, and the men whom I saw, in my attempt to reach Number Three Canadian General Hospital. I met private soldiers who were educated and cultured gentlemen, I met officers who could lay claim to none of these attributes. I met officers who were big enough for the positions they occupied—the *men* were bigger than the uniforms—and then the other kind—where the uniform was the only thing that commanded respect. I was unfortunate in the officer to whom I was first directed—and I realized my mistake when it was too late. I did not get across to France. My one day in Havre must remain as my only experience, within the war zone in France.

Lest I be misunderstood, let me say, that on the whole, the British and Canadian officers are a splendid lot of men. Where there are so many, it is not, perhaps, to be wondered at, that some lack in breeding, in courtesy, in morals, in everything that should go to make up "an officer and a gentleman," but such are the exception, not the rule.

Let me pay a just tribute to two officers who were in London while I was there. I called one day to see Brig. Gen. Carson, but he was busy, and I did not see him. In speaking of Gen. Carson, another officer said, "Gen. Carson is a 'man' if you go to him about anything. He seems to act along this line: 'Is it right?' 'Should it be done?' 'Can it be done?' 'If so—do it.' "

I never saw, nor spoke to Gen. Carson, but this was in effect, the opinion of all who came in contact with him. There was another Canadian officer who seemed peculiarly fitted for the position he held—Major Shaw, the Provost Marshal—now, I believe, in France. His training in the North West Mounted Police seems to have developed a manliness and a fund of common sense, which so much make for efficiency in those persons who are in positions of authority.

There was in Major Shaw a lack of the "consciousness of power" which is so characteristic of some (especially newly-fledged) officers. A little incident with which I came in contact, will illustrate how "horse sense" enters into the every day life of the officer on active service. A Canadian soldier married to an English girl, had obtained leave of absence, and was spending the time at the home of his wife's parents. He exceeded his time, and when he returned to London, was, of course, liable to be arrested. He reported to Major Shaw, who asked him if he had anything to say by way of excuse, for breach of discipline. The young man told a straight story, explaining that he had never been in England

before, that he had not seen his wife for some months, that the temptations were too strong, and he just stayed a day or two too long. "Do you know?" said Major Shaw, "that you are liable to arrest." "Yes, sir," was the humble reply. "Well," said Major Shaw, "I am not going to have you arrested. I am going to put you in charge of your wife (who was with him) and you will accompany her to Folkstone and report at once to your regiment." Both soldier and wife went away happy, and instead of being embittered by punishment, they were kindly disposed towards the service, by the consideration and tact of an efficient officer.

After a week spent very pleasantly at Folkstone, I returned to London on Friday, September 3rd, reaching my hotel about 4 o'clock. The trip was an exceedingly pleasant one, for the hop-picking was just beginning, and fruit also was being picked ready for market. Of course "Tommy Atkins" was much in evidence on the train, and the banter and chaff, the swapping of experiences, the discussion of officers, the "Bully beef" rations, all these things made the trip for the observant unknown passenger one to be remembered. The farm houses of southern England are exceedingly attractive, and I think it must have been such homes the poets had in mind when he wrote,

"The stately homes of England,
How beautiful they stand."

On Sunday afternoon we went to Hyde Park, and saw the crowd and heard a good band. What a boon these parks and concerts are to the thousands, whose only chance to see grass and trees and flowers—to hear music—to breathe the air that is sweet and pure—to get away from the interminable noise and clatter of "trams" and motor lorry, street piano and city huckster—is on Sunday afternoon, when, for a penny, on top of a "bus" they may reach and enjoy these beautiful, large, well-kept recreation places.

(To be continued.)

DUTY AND RESPONSIBILITY OF MEMBERS OF FACULTY COUNCIL OF THE ROYAL COLLEGE OF DENTAL SUR- GEONS OF ONTARIO

A. E. WEBSTER, D.D.S., L.D.S., M.D., Dean.

Read before the Faculty Council.

November 1, 1915.

Dentistry in Canada is in the unique position of having been influenced legislatively, educationally and professionally by the Mother Country, by the French, and by its neighbors to the south. It is believed by dental historians that dentistry was practised by the French in Quebec before it had reached any other part of this continent. Dr. Spooner, of Montreal, introduced the practice of devitalizing pulps of teeth with arsenic, which has relieved more suffering than many of the much-boasted discoveries of later years. The late W. George Beers, of Montreal, was a noted dental writer, scholar, athlete and patriot. He published the "Canadian Journal of Dental Science" in 1867, popularized the game of lacrosse until it is known as our national game. He upheld Canada and British connection in foreign countries when it took more courage than it does to-day.

In the Province of Ontario the men whose pictures hang about these walls had the vision of a profession of dentistry taking its place as an essential part of the political, educational, professional and social economy of the country. From the minds of these men came the first real dental Act in the world. They were able to persuade the Legislature that it is in the best interest of the public to have proper standards of dental education and not to allow the ignorant and dishonest to practice a calling demanding special skill.

Following the introduction of a standard of education came the necessity for a dental school. The responsibility of beginning such an institution of dental instruction was laid upon the shoulders of our late lamented Dean. He very soon associated with himself Dr. Luke Teskey, and later Dr. W. T. Stuart, whose presence has always been one of strength and good-fellowship.

It is hardly necessary to rehearse the various steps of progress in dental education in this Province to this body, and yet I doubt if any of us really appreciate the value of the changes that come from year to year but can only judge of the advance by studying carefully the distant past. During all the years of the past history of the Royal College of Dental Surgeons it could never be truthfully said that it was second to any institution of its kind. It has a history of a glorious achievement, as is exemplified by the standing of the profession in this Province and in Canada.

Ontario is the centre of dentistry in Canada, and Toronto is the centre

of dentistry in this Province, and the faculty of this college is the centre of dentistry in Toronto. In other words, this faculty is the centre of dental education in Canada. Is it equal to such a great responsibility? It is, if each member will do his part.

The greatest factor in centralizing dentistry in this college was the late Dean Willmott.

Canadian dentistry is distinctive and unique. It has traditions in legislation, in education, in research, in organization, in dental ideals, and above all, in noted men.

What is this Faculty Council going to do not only to maintain the present standards and ideals of the profession, but also to make such advances as will keep dentistry in harmony with other advancing professions and keep pace with the growing needs of a progressive people? We have many geniuses among us, many idealists, and many self-sacrificing souls, but little co-ordination of purpose.

It is true there may be a few who are members of this staff for the standing such a position gives them. In other words, using the college as a prop. An institution which has to prop its staff will soon fall. The members of the staff make the institution. This college can only hold its present position and make advance by each member of this staff taking a full measure of responsibility to govern, manage and maintain the traditions of the past. This college has become the centre of dentistry in Canada by the foresight, wisdom and energy of the late Dean Willmott. It is now too large to depend on one mind for guidance. Its future depends on every member.

Like the student who enters dentistry because of the imagined financial gains, and later learns that money is not everything, many of this staff have learned that the salary is inadequate, but yet they would not give up teaching. No real teacher is ever paid; yet he won't quit. The poor teacher is always over-paid if he gets anything at all. It is only after being on the staff for a few years that one learns that there is far more real satisfaction in teaching than is represented in the salary. At first one thinks that his whole duty is performed when he is at his post at the specified hours and does what he conceives to be the work specified. It isn't long until one begins to feel an interest in what the student is doing, and perhaps some interest in his progress. Interest is developed in how to teach the particular subject he has charge of. He begins to wonder if his subject is fitting the student to be a good dentist. He now becomes interested in other branches of the course and other members of the staff. Next comes an interest in the college as a whole, then the profession, and finally the public. Thus a teacher worthy of a place on this staff begins perhaps chiefly interested in himself, but develops by forgetting himself and becoming interested in the undergraduate, the staff, the college, the graduate, and at last the public.

Each member of this staff, then, in accordance with his stage of development has a duty: first, to himself; second, to the undergraduate; third, to the staff; fourth, to the college; fifth, to the graduate, and sixth, to the public.

We have been so absorbed in the past with our duty to the undergraduate that we have almost forgotten that there is a duty to the staff, the college, the graduate, or the public.

This faculty should be in the nature of a fraternal dental society, from which should emanate every progressive move in dentistry in this country. Why should it be necessary for members of this staff to associate themselves with some other organization in order that the profession may be uplifted and the public made acquainted with the value of dentistry?

If this faculty is the head and front of dentistry in Canada, and its members are the authorities in their various departments, why should this college not have the advantage that should come to it because of having taken part in developing such men? Every member of this staff should be known as such, and not as a member of some other organization. We should encourage and develop our men and give them a reputation, and in turn they will give the college a reputation. Then it is a duty of each member of the staff to encourage and support every other member of the staff, not alone in his college work, but in his professional career. If a member of this staff should be asked who it is can give an address to the public on oral hygiene, or to a dental society on filling teeth with porcelain, he should at once think of these departments in his college, and at once recommend the proper person. If the authority for every department of dentistry can not be found on this staff then it is time for a change.

There isn't time to go into full details now and the reasons why, but let me point out a few concrete ways by which members of this staff, and indirectly the college, the graduate and the public can be greatly benefited. Each member should prepare himself on some specific subject in dentistry, and be willing to present it at the first opportunity. This faculty should provide the opportunity first in the college, and then to the profession or to the public.

The organization of dentistry in Ontario is not much different from the agricultural department. The public in one case owns and runs agricultural education; in the other the dentists own and run dental education. In the department of agriculture there are the undergraduates, the graduates so to speak, and the public; in dentistry the same. In the department of agriculture there is a system of education for all three classes, so there should be in dentistry, and there is, but that part for the graduate and the public is done by the self-sacrifice of members of the profession outside of this college. In other words, this college does only part of its duty.

The experiences at Guelph taught them that it was not enough to educate the young agriculturist, but they must continue to lay before him

improved methods by issuing bulletins from time to time on special subjects and taking home to the farmer modern methods by giving demonstration and lectures in small classes in various sections.

The same experiences have been met in dentistry by those acquainted with dental literature, dental societies and oral hygiene. Some organized effort should be made to help the graduate and to acquaint the public with dentistry, and that effort should be done at the expense of those benefited, and not by the sacrifice of the few.

Every dental society in this Province should know that this faculty council is prepared to send one of its members as an essayist or clinician or public lecturer to them upon reasonable notice. In fact, whole courses in dentistry should be provided and taken to the very doors of the members of the college, and not leave their instruction in the newer methods of practice to youthful dental travellers.

The plan of increasing the annual fee of the Board might be considered and then pay members of the staff who go out, directly, from the treasury of the Board. At present most of the profession object to paying the annual fee because they see no benefit from it, but if it were made enough to be worth while sending and then direct help came to them the fee would be more popular.

At all our national meetings and our provincial meeting every department of this college should be represented on the programme.

THE RECENTLY EMBARKED OVERSEAS DRAFT OF THE CANADIAN ARMY DENTAL CORPS

Reported by JAS. M. MAGEE, D.D.S., L.D.S., St. John, N.B.

For the information of those who take an interest in the doings of the Canadian Army Dental Corps, and that embraces 95 per cent. of the members of the profession in Canada, a few lines concerning the departure of a few of its officers may not be amiss:

The second draft—20 officers, 20 non-coms. and 20 men—of the Army Dental Corps for overseas service mobilized at St. John, N.B., December 16th ult.

Major A. A. Smith, officer in command, together with Captain Winnett and Captain Wall, adjutant, arrived a day earlier as advance party, and were met at the train by a few St. John dentists who were apprised of their coming. After escorting the company to the Royal Hotel, where they put up, arrangements were made for the following day for instruction and the preparation of such papers as were necessary for embarkation. At 6.30 p.m. on the 16th the St. John Dental Society tendered them a modest banquet at Bond's restaurant.

At functions of this kind it is usually the guests who enjoy the hospitality of the host. In this instance it was the entertainers who experienced the greater enjoyment. It was the first occasion on which an Army Dental Corps draft had sailed from the port of St. John, and it was likewise the first occasion on which a dental society had the privilege of entertaining such a representative body.

The draft represents every division. There is a man from Victoria and a man from Cape Breton, the extremes of the Dominion, while the divisions in between are all represented.

The officer commanding is the right stamp of man; in fact, it is doubtful if there is another man in the list of the corp's officers who combines in his make-up so many of the characteristics essential to the administration as the acting chief dental surgeon. He has complete grasp of the design of the corps, has tact, patience, strength of purpose, kindness, an inviting personality, and he has a great consideration for all and every member in his command. From the O. C. down it was intensely gratifying to the members of the society that they were able to contribute in ever so small a way to their enjoyment. Major Smith, in response to a toast to the "Overseas Army Dental Corps Draft," gave a very instructive and comprehensive sketch of the corps.

When one considers the short time in which this corps has been in existence and analyzes the work accomplished it is little short of marvelous, and there is no question but that the corps justifies its existence.

A recitation of the many and varied struggles which the infant corps has had to contend with, and the way in which his claims for fair treatment have been met, convinced everyone who heard him that the greatest and best friend the Canadian Army Dental Corps had in the world was the Hon. the Minister of Militia, Gen. Sir Sam Hughes.

The St. John Dental Society cannot entertain so busy a man as Sir Sam, but it *can* endorse this tribute, and it also can and does feel that in entertaining the chosen twenty, it has been highly honored, especially when it is considered that the hand which guided the corps so safely through the troubled waters is leading the contingent overseas.

Dental Societies

TORONTO DENTAL SOCIETY, DECEMBER 16, 1915

The Toronto Dental Society held its monthly meeting on Thursday, December 16, 1915, at the Carls-Rite Hotel.

Dr. L. M. Waugh, of New York, delivered an address on "Radiography," which, as he said, was a talk about a simple method of taking radiographs for every day use. He said that the X-ray is essential to honest dental practice, because without it no one could work with any degree of certainty in the root canals of human teeth. He did not wish to be classed with those who went off at a tangent with any new thing that came along. It is quite possible to have an X-ray outfit in an operating room without enlarging the layout. It requires only seventeen inches of space, two minutes' time and fifteen cents expense to make a film, and about five minutes to develop it. The tube costs about \$25, and will make about four hundred pictures, and if the tube is repumped, which would cost about six dollars, it will make four hundred more pictures. At the present time there is some tendency to make X-rays ridiculous by physicians and unskilled radiographers pointing out in the pictures many things that cannot be shown. A case was reported where the physician wrote on his diagnosis chart that the radiograph showed certain varieties of micro-organisms. The radiograph may supplement clinical history and clinical findings, but must not be at variance with them. He was not in sympathy with those who fill root canals and all the area around the apex with chlora-percha.

Dr. Waugh had a radiograph machine present with which he made several pictures, developed and put them on the screen. He illustrated how convenient and easy the operation is, and at the same time showed how essential it is to dental practice.

COPY OF RESOLUTION PASSED BY THE THUNDER BAY DENTAL ASSOCIATION

Whereas, we as dentists fail to recognize abnormal conditions of the mouth and throat other than those directly connected with the teeth as we should, such as tubercular ulcer, stomach, syphilitic lesions, adenoids vegetations, lesions of the ethmoid, tonsilitis, suppurative tonsilitis, and others, we feel that the Board of Directors should give more clinical instruction in these diseases than is given at the college at present.

ONTARIO ORAL HYGIENE CONFERENCE

The Ontario Oral Hygiene Conference was held in Toronto on December 7, 1915. About twenty members assembled at the Royal College of Dental Surgeons at 10.30 Tuesday morning, and were taken to the Broadview Public School, where a public school dental clinic, under the direction of Dr. Preistman was in operation. The equipment and methods of practice and keeping records were carefully inspected. Then the party were taken to the General Hospital to see the dental clinic in operation under the Board of Health, conducted by Dr. Wagg. The equipment and arrangements for caring for both the outdoor patients and indoor patients are most perfect. The clinic is open every forenoon, and on two afternoons each week. It is open for extracting under general anaesthetic by the dental students.

During the past year dental clinics have been established under the Board of Health in St. Michael's, Western and General Hospitals. This is in addition, of course, to the clinic for children at the corner of Yonge and Grenville streets. After the inspection of this clinic the party assembled at the National Club for luncheon as the guests of Dr. Harold Clark. After luncheon Dr. Belcher, of Rochester, the editor of "Oral Hygiene," gave a short history of dental inspection, dental clinics and the organization of the new Eastman Dental Infirmary to be established in Rochester.

From the National Club the party visited the military camp at the Exhibition grounds. The dental clinic is nicely established in the Dairy building, where there are good chairs, fountain cuspidors and a fair equipment. There are nine chairs, with an officers' room and a laboratory. This clinic is under the direction of Capt. G. G. Hume. It was learned at that time that Drs. Burns, Staples and Matchett will leave in a few days for the front.

The next visit was made to the Toronto Technical School, where two hours were spent in inspecting this most magnificent building for the advancement of technical education.

The regular meeting was then held at the Walker House. Dr. R. G. McLaughlin, chairman, in the chair, opened the meeting by saying the preliminary would be short, and that the subject for discussion was an international question, bearing upon school clinics. In Boston a method of centralization of clinics was followed; in Rochester a similar method was adopted, while in Toronto clinics for school children were distributed in the different public schools throughout the city.

Dr. Cross, of the Forsyth Dental Infirmary, had been invited to be present, but having been unable, sent his paper which was read by Dr. R. J. Reade.

REPORT OF THE RESEARCH INSTITUTE OF THE NATIONAL DENTAL ASSOCIATION

We have just returned from the meeting of our Ohio State Dental Association, and are writing to report the magnificent support that has been given to our work. From the time of the opening session of the convention, at which they voted \$4,000 from the treasury to the building fund of the Research Institute of the National Dental Association, to the closing session on the fourth day, every period was filled with enthusiasm in the expressed effort to give every possible support to the national research movement. We also secured, as gifts from the dental exhibitors, practically a complete dental equipment for the institute, amounting to upwards of \$2,000, and about \$1,000 was added to the current research fund, making a total of about \$7,000. This is an illustration of the earnest co-operation that our dental profession is giving in establishing this work.

The property has been purchased, and we expect to begin moving in this week, and will have a house-warming in the form of an opening reception and lecture on Monday evening, February 7th, on which occasion the officers and some of the trustees of the National Dental Association will be present, with the members of the dental and medical professions. The officers, trustees and members of the Research Institute will be hosts. The purpose of this meeting will be to inspire our local profession and philanthropists to an appreciation of the work and its opportunity.

We are sure you will be pleased to know that, in the short time that has elapsed since we decided to purchase the property just a few weeks ago, over one-third of the entire cost has been provided, and considerable more is in sight, the largest part of which has come in small contributions from the members of the dental profession from all over the country. The research fund has not been, and will not be, used for the building.

We are continuing our efforts to secure the money, so that our interest on the mortgage may be reduced to the minimum as quickly as possible. There are many very pressing problems of research confronting us. There is, however, very strong encouragement that our efforts may be early helpful to humanity and the healing professions, and we shall enlarge the work just as rapidly as becomes possible.

We feel sure that this week's action of the dental profession of Ohio will inspire the profession of the entire country to unite in a worthy universal effort to meet our opportunity of service to humanity.

Yours very sincerely,

WESTON A. PRICE.

ALUMNI ASSOCIATION, DENTAL DEPARTMENT UNIVERSITY OF BUFFALO

The Annual Alumni Meeting of the Dental Department, University of Buffalo, will be held at the Iroquois Hotel on Friday and Saturday, February 18 and 19, 1916.

We shall have with us this year Dr. Elmer S. Best, of Minneapolis, who will bring to you an interesting essay and clinic on "New Methods of Root Canal Treatment," also Dr. Alfred S. Walker, of New York City, who will clinic both days of the meeting on the following subjects, viz.; (a) Ionic Medication in Dentistry; (b) The Faradic Coil as an aid in determining the vitality of the pulp.

In addition to the above named clinicians we have several more from a distance and a good array of local talent.

All of the exhibit space is taken, so you can be assured that the meeting will be up to the standard in this respect.

Don't forget that on Friday evening we shall have our usual dinner and a good social time.

Business Committee—G. E. Jackson, J. L. Cleveland, T. A. Hicks.

MEDICAL INSPECTION DEPARTMENT, CALGARY

REPORT OF THE DENTAL INSPECTOR.

	Number examined.	Number with defective permanent teeth.
Previously examined	4,663	2,773
Parkhill	90	44
King George	350	160
Sunnyside	150	60
Gordon Black	53	14
Mewata Park	81	22
Grand Trunk	74	16
Capitol Hill	32	4
North Mount Pleasant	144	54
Crescent Heights Public	191	59
Haultain	452	210
Ogden	50	27
Connaught	433	169
Crescent Heights High	299	153
Collegiate	339	181

Earl Grey	320	129
Glengarry	62	49
24th Avenue	84	31
	<hr/>	<hr/>
	7,875	4,155

From my examination to date I do not hesitate in saying that 96 per cent. of all children under sixteen years of age in the Calgary schools are affected with serious decay of the teeth and other lesions of the mouth, and 58 per cent. of the cavities are in their permanent teeth, the percentage reaching to 62 per cent. in the children of 8 and 9 years of age. After questioning various classes, I feel safe in saying that 75 per cent. seldom, if ever, brush their teeth. Out of all the children I have attended in the clinic I find about 30 per cent. have, or will have, to loose their six-year molars. What a handicap these young men and women of to-morrow are starting out with!

I believe children must be taught some system of "oral hygiene." We must educate the public that they may know the care of the children's teeth is a necessity, not only to lessen suffering, but to have good health. We should interest the teachers in the necessity of "oral hygiene." I have so far found that the children are always ready to grasp at anything new, and they are especially attentive if told the effects of neglected teeth.

With more suffering children than we can care for in the clinic, how can we properly care for the educational work? How can we extend the gospel, "*A clean tooth never decays?*" There are about 4,000 children in the Calgary schools needing attention, and each child has an average of four cavities in his teeth, making a total of 16,000 carious teeth. Even if wholesale extraction were permitted, it would take three dentists three years to restore these mouths to proper condition. Finances would probably not allow an appropriation sufficient to do this reparative work. Unless followed by a definite system of prophylaxis in the schools such work would be palliative only; in a few years an equal number of cavities would be accumulated, necessitating similar work being done over and over again. Until greater interest in the care of the mouth is awakened among the parents and children the making of the service compulsory would cause much trouble.

A strictly reparative programme for us to adopt at present would be hopeless and endless, for it does not stop the flood at its source, which is the first grades in the schools, but merely repairs the damage after it occurs.

I believe the solution is by education, which means toothbrush drills, prophylactic treatments, personal instructions, illustrated lectures and printed matter for the children and parents.

Suppose we use our clinic in the school board office to fill the permanent teeth of the first five grade pupils and for extraction of temporary teeth that are abscessed or need removing. We can, in a comparatively short

time, have a reasonably clean environment for the new permanent teeth that are erupting from six to twelve years of age. What new cavities would form in the permanent teeth in the next five years under this prophylactic care would be comparatively few in number, and could easily be taken care of by a small repair clinic.

We could also provide for the relief of any grade pupils suffering from toothache and unable to pay for dental service.

These first grades would receive the most attention, and the other grades given attention as time permitted. As these first grade children advance in their school work they are followed by continued instruction and necessary repairs to permanent teeth which have decayed during this five-year period. At the end of this period it is expected that these children will present hygienic mouth conditions, and with care and education, as to the value of a clean mouth, they would then be expected to care for their own teeth. So far as the dental clinic or the municipality is concerned their education in this branch would be finished, and no further responsibility assumed. If the child allowed his teeth to decay and the parents were not sufficiently appreciative of the service and instructions, then it would be no concern of the municipality, who had performed its duty to the child. We must give treatment and instruction to all. This also is justice to the taxpayer. We must make our dental clinics of the future more democratic, service must be rendered to all as part of the regular school work, and be more educational.

So long as the dental clinic is a charity institution it cannot be accepted as a regular part of the school work. Give treatment and instruction to all and it is immediately placed on a different plane and is received by the rich or the self-respecting poor, as they now accept manual training, domestic science or gymnastics.

I believe that if the children as they grow up were told or instructed in the various other disorders attributed to faulty oral hygiene, decay would not be so very prevalent as we find it to-day.

In conclusion, I beg to summarize recommendations contained in this report, and would respectfully ask that they receive the serious consideration of the committee:

1. That a second dental chair and equipment be installed and equipped at a cost not exceeding \$500.
2. That an assistant dentist be appointed from January 1, 1916.
3. That we must look for the time when dental service must be rendered to all as part of the regular school work.
4. That an active "oral hygiene" propaganda be inaugurated immediately, taking the form of:
 - (a.) Charts and diagrams in the schools.
 - (b.) Distribution of approved literature to the children and parents.
 - (c.) Lectures to teachers.

(d.) Illustrated lectures to parents and teachers for the purpose of securing the active co-operation of both.

(e.) A propaganda in the press.

All of which is respectfully submitted,

(Signed) LESLIE WRIGHT, D.D.S.,
Dental Inspector.

REPORT OF DENTAL INSPECTOR FOR NOVEMBER.

To the Chairman and Members of the Calgary School Board:

From the thirty Protestant schools, one hundred and thirty-one children received free dental treatment, as follows:—

Mount Royal	6
Haultain	6
Millican	4
Bridgeland	11
Victoria	12
Erlton	6
Sunalta	11
Parkhill	6
Col. Walker	7
Balmoral	1
Ogden	3
Ramsay	13
Glengarray	2
King Edward	12
Central	4
Hillhurst	6
Grand Trunk	1
Bridgeland (Cottage)	1
Riverside	4
Normal Practice	2
Crescent Heights High	2
Sunnyside	5
King George	1
Capitol Hill	1
Belfast	1
Earl Grey	2
Connaught	1

Total 131

From the six Separate schools, twenty children received free dental treatment, as follows:—

Sacred Heart	7
Bridgeland Separate	3

St. Anne's	3
St. Joseph's	5
St. Mary's	2

Total 20

The total number of operations performed were three hundred and four, divided as follows:—

Extractions	200
Treatments	77
Fillings	25
Prophylaxis	2

Total 304

There were only twenty cases completed; thus you can readily see that each child is the unfortunate possessor of no small number of carious teeth.

The amount of reparative work accomplished in the clinic is comparatively small. The majority of teeth which can be saved for these children necessitate treating, a procedure requiring much time and patience. As almost all children have an apathy for the dental chair, a great deal of time is lost in coaxing them to allow us to do even a little work. It would be criminal for us to lose the confidence of these little patients now, for that fear would be carried throughout their lives, and thus much unnecessary damage would accrue therefrom. Even if little work is accomplished now, but we gain the confidence and establish in them an immunity from fear of the dental chair, we will have done these boys and girls a lasting favor.

Arrangements have been completed whereby motion pictures on "Tooth-ache," "Oral Hygiene," etc., will be shown in the schools in the near future. Illustrated lectures will be delivered at various centres in the city, and "Oral Hygiene" pamphlets distributed.

Arrangements have also been made, if the Board deem fit, by which tooth brushes and paste can be procured and sold to the children at 10c. for the brush and a small tube of paste, which is the actual cost.

The more I see of the mouth conditions in Calgary school children, the greater I believe in the old adage, "An ounce of prevention is worth a pound of cure." I believe one of the greatest problems confronting this Board is educating the children in "Oral Hygiene."

All of which is respectfully submitted.

LESLIE WRIGHT, D.D.S.,

Dental Inspector.

A dental clinic has been opened at Fort Osborne barracks in the quarters formerly occupied by the general staff officers. Each unit may send up six patients daily, but other arrangements must be made by telephone if more than that number require attention in any one day.

“CANADA”

Set on a far-flung land, stretching from ocean to ocean;
Ten wide strides of the sun, each great enough for a nation;
South from the Pole, half over the breast of the world;
Greater than gilded the dreams of Alexander or Cæsar.
Full of the riches of earth: gold, man is willing to strive for;
Iron for peace and for war, coal, silver and copper,
Timber for housing and ships and square leagues of paper
For wrapping of goods and of thoughts for ages uncounted.
Lakes and rivers and seas, teeming with spoils for the fisher;
Thousands of miles of coasts, indented with harbors;
Millions of acres for planting, saluting the tiller;
Life, joy and food for an hundred millions of workers.
Was ever such heritage vouchsafed and sealed to a people?

Who are the people upon whom so kingly a dower
Is lavished unstinted, the price but the holding and using,
With honor and labor in trust for the nation arising?

These are the men of the Land with the Stake of the Ages;
Charged with the making of history for half a continent.
Sprung from the loins of virile and Northern Europe,
Blent of the blood of the Viking, the Angle and Saxon,
Tinged with the fire of the Frank, the Celt and the unyielding Scot,
With brain, brawn and will for the task of the future;
Out of Time's crucible turning a breed that is yet to be conquered.

The eyes of the questioning world are upon us.
Loud echoes the void with the challenge, we could not do other;
Where great things are given, there must great things be expected.

With Might must come Right, with Power must come Justice,
Turning our backs upon self and the fleshpots of Egypt;
Forgetful of Creed and of Race and the poison of Faction,
Welding the links of a happy and powerful nation;
Canada, free and triumphant, a world-hope accomplished.

MARK G. MCELHINNEY.

Ottawa, New Year's, 1916.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, JANUARY 15, 1916.

No. 1.

DENTAL STUDENTS WHO ENLIST

At a meeting of the Faculty Council of the Royal College of Dental Surgeons of Ontario, held Dec. 20, 1915, the question of the status of students who enlist before the annual examinations was considered. About thirty students in all the years had signified their desire to enlist to Dr. Willmott, secretary of the Faculty Council. Last year the Board granted the year to students of good standing who enlisted after March first.

In the discussion it was shown that even if the students enlisted now they would not likely get away before the spring or even next summer, and if they stayed on at the College their drill could go on. In the department of Arts of the University it was said students were granted their year if they enlisted. In a professional course such as medicine or dentistry where an education is for the protection of the public it could hardly be advised that young men unqualified to render good public service should be given a license.

After careful consideration of all aspects of the question and the great need of men to defend our country it was decided to ask the Board to give

such students as enlist now credit for what they had done up to date, and those who apply after Feb. 15 an oral examination, upon which if satisfactory, the year will be granted. Candidates who fail may apply again after thirty days. It is understood, of course, that applicants for such examination must be first acceptable to the military authorities.

In Great Britain the situation is somewhat different. Under Lord Derby's recruiting scheme the dentists made application to be exempt from service, because of the special requirements of the public. His Lordship would not grant this but said all must register for service and if called upon for service they might apply on the grounds suggested or ask to be set back to another draft.

The case of the dental student is specially given by Lord Derby as follows: "Those eligible to take their final examinations during the year 1916 would be allowed to complete their course of study after enrolling in the Army Reserve B. Enrolled students in earlier years when called up may apply to be put back to a later group, if an examination is imminent. Any student desiring any such form of exemption or postponement should produce a certificate from the dean of his school to the Local tribunal."

It is quite clear that in Great Britain there is no desire or intention to exempt a student from examination if he joins the army, in fact, if he joins the army, his active service is postponed until he takes the regular examination.

There are about thirty students of the R. C. D. S. now overseas.

MILITARY CONVALESCENT HOSPITALS IN CANADA

The dentists and the dental officers in the various military divisions of Canada should know the basis of organization of the military convalescent hospitals. Although in many of the provinces there is a special committee appointed by the legislature to look after the returned soldiers and there is a similar committee appointed by the Dominion Government, nevertheless, these hospitals are directly under military authority. It is true that many of them are equipped by private gifts and the medical treatment is advised by civilian physicians, surgeons and dentists, yet this is all with the full knowledge and consent of the officer commanding and the officer in charge of each service. In view of this dentists should be careful not to offer their services without the knowledge and consent of the dental officer in command of the division.

The dental officer commanding in the division in which is situated a convalescent hospital should at once make an appointment to the hospital and see to it that the returned soldier is properly cared for. The country

owes a special obligation to the returned soldier. He should be as far as possible put in a position to earn his living as well now as before he left our shores. The very best dentistry should be done for them. Their position is different from those who are going to the front; they have given their best and we owe them the best. The soldier leaving is made fit as far as possible for a period of two or three years at the outside, while these men are to be made fit for their future life's work.

THE DENTIST IS MORE THAN A MECHANIC

In an editorial in the "Canadian Journal of Medicine and Surgery," discussing Medical education, appears the following sentence: "Various bodies of nurses, dentists and others coming into public life at a later date than the last legislation have asked for government recognition, but in vain." Dentists have not been recently asking for recognition in vain. They have all the government recognition they want or need. They stand in this respect, in the same position as medicine. The Dental Act of Ontario was passed in 1868 immediately upon the formation of the Province. So it didn't come "into public life at later date than the last legislation."

In another paragraph in the same editorial appears this sentence: "The man with the toothache makes his own diagnosis and applies to the dentist, who performs the cure by mechanical means, in which, if he needs assistance such as general anaesthetic or treatment of sepsis he calls a regular practitioner." This sentence contains more real material for a sermon, we feel sure, than the writer thought. "The man with the toothache makes his own diagnosis." But suppose the man's diagnosis should happen to be wrong. All the dentists's mechanics couldn't help him. He must know more than mechanics to be of any value or rather not to do a real harm to the man. If the man's supposed toothache should have been caused by one of a dozen things outside of his teeth, what then? In which case it is the dentist's duty to say to the man, "You have nothing wrong with your teeth, nor are they the cause of your supposed toothache; you had better consult your physician."

"Who performs a cure by mechanical means," As the surgeon does, but when medical treatment is necessary to stop the toothache it should be applied by him because no other representative of the healing art knows anything about it.

"If he needs assistance such as general anaesthetic or treatment of sepsis he calls in a regular practitioner." This is a remarkable statement when one remembers that the use of general anaesthetics was introduced by a dentist and that notwithstanding the fact that dentists use more general and local anaesthetics than physicians and as a matter of fact, get more training and

practice in their use than is given to the medical students. This is as it should be because almost all operations of the dentists are made under an anaesthetic of some kind.

Now for the treatment of sepsis. If it were not for sepsis three-fourths of the occupation of the dentist would be gone. All the toothaches are due to "sepsis," which cannot be controlled mechanically without the loss of the tooth. Practically all periodontal diseases are due to "sepsis" and are treated medically as well as surgically.

The dentist who is only a mechanic is of little value to his patient and of little help to the general practitioner in clearing up obscure cases of pain and the results of local foci of infection.

The definition of dentistry as set forth in the dentistry act of Ontario is far broader than indicated in the editorial in question or as defined by the late Hon. David Mills, Minister of Justice of Canada, who gave the following definition.

A doctor of dentistry may practice medicine in so far as his medical treatment is incidental to his profession as a dentist. In this respect he stands in the same relation as a surgeon who is entitled to practice medicine in so far as his medical treatment is called for on account of a surgical case. Thus a dentist may find that the affection of the teeth is due to a constitutional condition of his patient and would thus be entitled to treat his patient medically to relieve pain. If all the teeth appear sound, he must consider whether his duties are not to treat the case constitutionally by the use of medicines rather than surgically by the forceps. He is, as far as the treatment of the teeth is concerned, a mechanic, a surgeon and a physician, and the responsibility rests on him in every case to decide in what capacity he must act.

Editorial Notes

Dr. W. D. Cowan was elected Mayor of Regina by acclamation.



Dr. Edwin Wilson, Perth, Ontario, has been appointed major in the 130th Battalion.



A cable has been received that Corp. H. Swann, son of Dr. John H. Swann, was killed in action.



Dr. Hopewell-Smith, who has charge of dental histology in the University, Montreal, has been acting mayor of Montreal.



Dr. D. M. Foster, Guelph, who has joined the Canadian Army Dental Corps, is now stationed at St. John, Quebec.

Dr. Eudore Dubeau, Dean of the Dental Department of Laval University, has been appointed professor of histology in all faculties.



Dr. F. Woodbury, son of Dr. Frank Woodbury, Halifax, N.S., has been appointed as dental surgeon to No. 7 Stationary Hospital unit, and ordered overseas with the unit. He has the rank of lieutenant. Dr. Woodbury recently passed the Dominion Dental Council examinations.



The "Literary Digest" has been copying extracts from dental journals of recent months in reference to the possibility of infection from a tooth-brush. There doesn't seem to be any evidence to show that there need be very much concern about the infection of an ordinary tooth-brush because generally speaking the micro-organisms which are to be found on a tooth-brush are organisms from the person using the brush and in such cases the patient is usually immune to his own micro-organisms, and if they didn't cause a serious infection when they were in the mouth, there is not much chance they will do so after having grown on a tooth brush for a few hours.

Correspondence

Editor, DOMINION DENTAL JOURNAL:

Dear Sir:—In the last issue of the Dominion Dental Journal, Quebec is reported editorially as having "voted down affiliation to the Dominion Dental Council to show disapproval of Ontario's attitude on the bilingual question," or words to that effect, and the comment is added, "that it seems strange that Quebec should see fit to punish other provinces for the faults of Ontario."

I am sorry to say that, as in most things written about Quebec in other Provinces, of late, the above paragraph is both inaccurate as to facts and unjust as to conclusions.

As a matter of fact Dominion Registration was not voted down at the October meeting of the College of Dental Surgeons of Quebec. It even advanced a step further than it had ever gone before as may be ascertained by a careful perusal of the Resolution adopted which read as follows:

"Resolved, that the Board of Gouvernors be instructed to affiliate this College to the Dominion Dental Council, when it shall have been demonstrated to their satisfaction that French speaking dentists enjoy, in the affiliated provinces, the same privileges granted English speaking dentists in this province."

It is hard to see what connection could be found here with Ontario's bilingual question. True, Quebec dentists may have their own individual

opinion about this matter, but I may state positively that at a special meeting of the French speaking dentists of the province, the question was fully and fairly studied and from a professional point of view only, prejudiced reports notwithstanding.

It is their belief that local conditions have to be kept in mind, in the transfer of men from one province to another.

Such dentists from other provinces as wish to enter Quebec should be equipped, they claim, to meet, at least partially, such conditions, and vice-versa.

Studying the D.D.C. constitution they found the D.D.C. preliminary requirements to call for:

"Latin and one of the following subjects: (1) French, (2) German, (3) Greek, (4) Physics and Chemistry. (Page 15 Section d D.D.C. Constitution)."

How could they admit that in a community where 90 per cent. of the population speak French, the later language (one of the two official languages of Canada) could effectively be replaced by chemistry, physics or even German? N'en deplaise to the apostles of Kultur and the will to power.

Then again they found no provision in the constitution for the examination, in their mother tongue, of French speaking candidates, which would prove in their opinion, an unfair handicap to most of these. The result was the above resolution which, at least, leaves the door open to a future amicable settlement of the whole question, provided it be approached with the right spirit of fair mindedness and mutual respect, by all parties concerned.

The French speaking dentists of Quebec, alive to the dental needs of their kin, have made generous, even lavish efforts to raise their professional standing. With what results anyone visiting the Laval Dental School and watching the work done there may judge for himself.

There is no desire, at least among the great majority of them, to refuse intercourse with others, provided such intercourse be not of a such nature as to jeopardise the costly results of their past efforts and sacrifices.

Their French temperament, inherited from their forefathers, makes them impulsively agreeable to all kinds of social, business, or professional intercourse. But their British training and American associations have also made them diffident of entering into any contract before making sure that it is fair to them as well as to the other party. If you will pardon the "Americanism": "They are willing to do business, but they want to get a square deal."

Yours truly,

JOSEPH NOLIN,

Obituary

CLARENCE R. MINNS, L. D. S., D. D. S.

IN MEMORY.

Sleep on and take thy rest,
We have loved thee,
But God has loved thee best.

The late Dr. Minns was born in Toronto, Ontario, in the year 1892, where he received all his education, having attended Lansdowne Public School, Harbord Collegiate, and in the fall of 1909, he entered the Royal College of Dental Surgeons, as a student in dentistry.

His career up to his death was a most brilliant one and, if he had been spared, there was no young man in the profession, who had a more successful future to look forward to.

As I said before, he entered the college in 1909 and put in the four consecutive sessions, graduating in the year 1913. He had the proud distinction of having stood first in his class every session at college, a record that few dentists have ever attained and one set for students to aspire to equal.

As a class-man he was beloved by every member of his class because, besides being clever and energetic in his work, he did not shirk the class functions and social side of student life, and upon graduation he was elected permanent secretary of class '13.

The following session he returned to college as a demonstrator under the late Dr. W. H. Doherty, in Dental Anatomy, and Dr. A. E. Webster in Operative Dentistry. The next session he served as demonstrator in clinical dentistry on the infirmary floor, the position that he still held at the time of his death. He was also recently appointed secretary of the programme committee of the Ontario Dental Society.

Besides these college connections he was appointed to the staff of the Municipal clinic under the direction of Dr. J. A. Bothwell, and later was in charge of the dental department of the Hospital for Sick Children.

In the month of March, 1914, he along with myself opened a suite of modern dental offices in the Bank of Nova Scotia building, corner of College and Bathurst Streets, and I must say as a partner in business and a chum, one could not conceive of a more friendly, just and upright person than Clarence. He was kind to his patients and certainly had their interests at heart when they applied for dental treatment.

There was never a more conscientious worker graduated from the college than he, and being of a nervous disposition, his work worried him

to a great extent, especially if he thought he had not rendered the best service possible to a patient. He enthused over modern ideas and never failed to attend a dental society meeting, held in this city.

Dr. Minns was a single man and an only son, there being an elder sister and mother and father, who are still living, and I feel sure that it is the wish of every dentist, who knew Clarence, that they be comforted and blessed by the Almighty in their sad moments.

December, 1915.

JAMES C. ALLAN.

Dr. Weston A. Price, of Cleveland, Ohio, will lecture in Toronto on Monday evening, February 14th, under the auspices of the Canadian Oral Prophylactic Association. His lecture will be illustrated with moving pictures of the blood circulation, showing the effect of bacterial infection. The Amoeba Bucalis, Kartulis and other organisms will also be illustrated in this film.

R. W. Hunt was fined \$30.00 and costs in Toronto police court, for practicing dentistry without a license, on December 23rd, 1915.

MILLIONS of Successful Operations Performed with the aid of

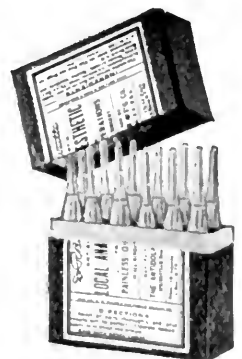
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Dominion Dental Journal

VOL. XXVIII. TORONTO, FEBRUARY 15, 1916.

No. 2.

Original Communications

ANOCAIN

E. W. PAUL, D.D.S., L.D.S., Toronto.

ANOCAIN MEETS ALL THE ESSENTIALS OF A LOCAL ANAESTHETIC.

1. It possesses active anæsthetic properties, and the available anæsthesia is quite prolonged when combined with adrenalin.
2. It is freely soluble in water, and is readily absorbed by the tissues.
3. It rarely exercises any toxic effects on the circulation, respiration or the nervous system.
4. Where proper aseptic precautions are observed, it does not produce any irritation or sloughing of the tissues into which it is injected.
5. It can be sterilized by boiling.

On account of the difficulty—almost impossibility—of securing novocain, many will be glad to know that the Wingate Chemical Co., Limited, of Montreal, have discovered and prepared a product called "anocain" which, I believe, they claim possesses exactly the same constituents as novocain. I have tested it in about fifty or sixty cases, and its action is exactly similar to novocain, equally as efficacious, and not the slightest toxic symptoms have been noticed. A nose and throat specialist also advises me that anocain, as far as he can tell, works exactly the same as novocain.

Care must be taken not to form an opinion re the merits or demerits of these agents too hastily. Dr. Day, as well as I, has had cases during the past month with novocain which, if anocain had been used, would have been sufficient to have caused us to discard it forever. It is the first case in eight years' use where a patient of mine has become unconscious while using novocain.

Case.—Lady, age about 30, slight, habit of fainting readily; operation, amputation of lateral root. After the insertion of the point of the needle and the injection of about a drop of the novocain solution, the patient fainted away, and extreme pallor, muscular twitching, and a very weak and thready pulse were evident. After recovery the injection and the

operation were continued, and the above performance occurred twice again in the next fifteen minutes.

A week later the same operation was performed on the opposite side of the mouth. About five minutes prior to the injection, a drachm of aromatic spirits of ammonia in water was given, and the patient did not suffer the slightest inconvenience.

"Anocain" being a Canadian product, and apparently possessing unusual merit, courts our investigation, and doubtless deserves our commendation. It is supplied in tablet form, combined with adrenalin, and is used in 1 to 2 per cent. solutions.

THE ADVANTAGES AND RISKS OF COMBINED LOCAL AND GENERAL ANAESTHESIA

W. H. B. AIKINS, M.D., Toronto.

Read before the Academy of Medicine, December 7, 1915.

During the last few years considerable attention has been devoted to the development and improvement of methods of anaesthesia. As a consequence of this the efficient administration of anaesthetics is no longer regarded as merely an adjunct to surgery, but is generally recognized to be quite as much a specialty as any other department of medical science, and there is therefore an increasing tendency to limit it to those who have made a special study of the various drugs employed, and of the different methods of administration, with their attendant risks. This has naturally resulted in a great reduction in the number of fatalities occurring under anaesthesia.

The principal general anaesthetics which have been employed are chloroform, ether and nitrous oxide gas. It was formerly supposed that more risk was associated with the use of ether than with that of chloroform, but the more recent statistics indicate that this is a fallacy, and that while the mortality from chloroform is about 1 in 3,000, that from ether is only about 1 in 30,000. Judging from the statistics collected by Buchanan, which include many millions of administrations, the use of nitrous oxide gas is even safer than that of ether in the hands of an expert anaesthetist, the mortality being about 1 in 5,250,000 administrations.

Both chloroform and ether are followed by unpleasant symptoms, identical with those of shock, such as lowering of blood pressure and marked depression, and in addition they have a deleterious action on the kidneys, and chloroform produces fatty changes in the parenchyma of various organs. To these disagreeable and in some instances dangerous sequelae is largely due the more recent development of local anaesthesia, which now occupies a definite place in surgery. It is very extensively employed in ophthalmic, nasal and laryngeal operations, and has also been used in many varieties of

major operations. It is, however, not suitable for all classes of surgery, and cannot therefore completely replace general anaesthesia.

The recent advances in local anaesthesia may be said to date from the discovery of the properties of cocaine, the active principle of which was isolated by Gardeke¹ in 1855. Kolliker², in 1884, first employed it in connection with surgical operations, using a 2 per cent. solution to anaesthetize the cornea and conjunctiva. In 1885 Corning and Roberts³ showed that complete local anaesthesia resulted from the injection of cocaine into the tissues, and in the same year Halsted² first used it in dentistry, injecting it around the inferior dental and lingual nerves before the extraction of a tooth. Many synthetic substances have been from time to time suggested as substitutes for cocaine as local analgesics, and are known by various names, including eucaine, alypin, stovaine (chiefly used in spinal anaesthesia) anaesthesin, novocaine, nirvain, acoine, new orthoform, holocaine and tropocaine. Some of these manifest less toxicity than cocaine, whilst they appear to have equal analgesic value.

Local anaesthesia may be produced by cocaine or the other substances mentioned above by one or other of the following methods, or a combination of both of them:—

1. Direct injection of the solution into the tissues to be operated upon, which is described as infiltration analgesia.

2. Injection of the solution into or around the nerves supplying the part to be operated upon, which is termed regional analgesia. This latter method is the one chiefly used in dental operations. In addition to its analgesic properties, cocaine possesses the extremely useful characteristic of rendering the mucosa to which it is applied almost bloodless.

If given in very large doses cocaine produces general anaesthesia. Its analgesic effect, when applied to the mucous membranes, appears to be due to its influence of the terminations of the sensory nerves. Analgesia does not result from the application of the drug to the skin.

Soon after the discovery of the analgesic properties of cocaine anaesthetists began to realize that, although there was no doubt of its value in this connection, it not infrequently had toxic effects, sometimes terminating fatally. Even in small doses it has a marked depressing action upon the human heart, whilst large doses may result in dyspnoea, delirium, epileptiform attacks, convulsions, sudden collapse, and finally death from toxæmia. Some individuals manifest idiosyncrasy in regard to cocaine, and in such cases comparatively small doses of the drug may lead to cocaine poisoning. These toxic effects of cocaine have led to the preparation of the substitutes which have been previously referred to, some of which are said to possess less toxicity than the original drug.

1. Gardeke. Cited by Dudley Buxton: "Anaesthetics," 1911, p. 106.

2. Kolliker.—Cited by Stanley: St. Bartholomew's Hospital Journal, 1912-13, XX, III.

3. Corning & Roberts.—Cited by Pilcher: Abdominal Surgery, p. 100.

In this connection Miller⁴ emphasizes the fact that whilst these substitutes are less toxic than cocaine, none of them can be regarded as entirely safe, so that the idea that they may be safely given in unlimited doses is bound to result in disaster. His experience indicates that alypin is the best preparation to use. According to Pilcher⁵ the mucous membrane of the urethra is particularly susceptible to the toxic influence of cocaine, and he strongly protests against its use before cystoscopy or painful operations in this region.

One of the disadvantages of cocaine and similar preparations is the rapidity with which the analgesic effect passes off, so that sufficient time is not allowed to permit of an extensive operation. This objection has been met by the addition to the cocaine solution of a small quantity of one of the various preparations of the active principle of the suprarenal gland. This combination was first tried in rhinology, with the object of constricting the small vessels at the site of injection, and thus reducing the blood supply. It was subsequently discovered that an important result of this constriction of the vessels is to localize the analgesic solution, and prevent its absorption, thereby prolonging the duration of its analgesic effect and minimizing its toxic influence upon the tissues.

Combined Local and General Anaesthesia.—During the last few years many writers, more especially Dr. Crile, have advocated a combination of local and general anaesthesia. In this connection a great variety of drugs has been recommended for producing local anaesthesia, including morphine, scopolamine and atropine, but cocaine and adrenalin are only two with which I propose to deal in this paper. It should always be borne in mind that there is such a thing as idiosyncrasy in regard to certain drugs, and that a careful inquiry should therefore be made with reference to the previous history of the patient, in order to discover if there have been any signs of intolerance of the particular drug which the anaesthetist proposes to use for the production of local anaesthesia.

Combined local and general anaesthesia is most commonly employed in the surgery of the throat and nose. In 1894 Dr. Scanes Spicer⁶ suggested and practiced the method of spraying the fauces with a solution of cocaine in laryngeal operations, and stated that in his experience this plan permitted of lighter general anaesthetization, and lessened irritability, hemorrhage and salivation. In 1895, "somewhere" in Europe an observer⁷ published a paper in which he stated that he had adopted the practice of painting the mucous membrane of the nose with cocaine before administering chloroform, and found that this prevented reflex cardiac inhibition, due to irritation of the fifth pair of nerves by chloroform vapour. This method has also been

4. Miller, A. H.—*Jour. Amer. Med. Assoc.* 1914, LXII, 196.

5. Pilcher.—"Abdominal Surgery."

6. Scanes Spicer—*Brit. Med. Jour.* 1894, 11.1171 and 1276.

7. Rosenberg.—*Berlin Klin. Wochens.* 1895, Jan. 7 and 14.

practiced by Gerster and Mayer⁸ of New York. Obalinski⁹ makes a hypodermic injection of a 3 per cent. solution of cocaine when the patient is slightly under the influence of chloroform, and claims that this procedure reduces the amount of chloroform required, and lessens the severity of the unpleasant symptoms produced by the general anaesthetic. According to Hewitt¹⁰ the advantages claimed for a combination of local and general anaesthesia are:—

1. The elimination of the element of fear, to which a certain number of anaesthetic deaths are due.
2. The production of a somnolent or apathetic condition which facilitates anaesthetization.
3. The absence of excitement during anaesthetization.
4. A diminution of the amount of the general anaesthetic necessary to produce the necessary relaxation and depth of anaesthesia.
5. The diminution of secretion, especially that of mucus under ether.
6. Lessening of the tendency to vomiting and pulmonary complications.
7. Lessening of the tendency to shock.
8. A longer period of insensibility after the end of the operation, reducing the discomfort and pain.

Frank¹¹ emphasizes the importance of the elimination of operative shock, and of the absence of straining on the part of the patient during operation, which tends to minimize trauma of the tissues concerned.

In a discussion at a recent meeting of the Royal Society of Medicine of London, Mr. Bellamy Gardiner¹² emphasized the necessity of the proper use of cocaine and adrenalin as an adjunct to intranasal operations. When applied to the mucous membrane an hour before the administration of the general anaesthetic, which is a sufficient interval to permit of adequate absorption, a solution of equal parts of 5 per cent. cocaine and 1 in 1000 adrenalin produces ischaemia, and the local analgesic action tends to reduce shock by blunting and retarding stimulation of this extremely sensitive region. For the general anaesthetic he is in the habit of using chloroform and ether. He points out the imperative necessity of packing the nose an hour before general anaesthetization, as the lapse of a shorter period of time does not in his experience suffice to produce perfect operative ischaemia.

At the same discussion Mr. Seccombe Hett¹³ stated that in practically all operations upon the nose and throat he used the combined method of anaesthesia, and found that it tended to prevent mental depression and a

8. Gerster & Meyer.—*Annals of Surgery*, 1896.

9. Obalinski.—Cited by Buxton: "*Anaesthetics*," 1914.

10. Hewitt.—"*Anaesthetics*," 1912, p. 272.

11. Frank.—*Amer. Journ. Obstetrics*, 1915, LXXI, 630.

12. Bellamy Gardiner.—*Proceedings Royal Soc. of Med.*, 1912-13, Section Anaesthetics, p. 52.

13. Seccombe Hett.—*Proceedings Royal Soc. of Med.*, 1912-13, Section Anaesthetics.

condition which he described as traumatic neurasthenia, which otherwise as a common post-operative complication in these cases.

Whilst most writers admit that preliminary local anaesthesia is of great value in some cases, especially in highly strung, nervous and sensitive individuals, and that in many instances its results are practically ideal from the point of view of the patient, surgeon and anaesthetist, there can be no question that in others it involves very real dangers, which have heretofore not been so generally recognized as it is desirable they should be. Several cases have been reported from time to time which show that the procedure is by no means without risk, and is sometimes followed by serious symptoms, or even fatal results. The following case is quoted by Hewitt: Submucous resection of the nasal septum was performed in a woman aged twenty-three. Sometime before operation both nostrils were plugged with cotton soaked in 10 per cent. cocaine and adrenalin solution. Chloroform was subsequently administered, and while the corneal reflex was still present solid cocaine was applied to a hyperaesthetic point. This was followed by severe symptoms of cocaine poisoning, but the patient eventually recovered.

Mr. Seymour Jones¹⁴ reports one hundred cases of submucous resection of the nasal sputum, in which a solution of adrenalin and cocaine was injected into several points on the septum, the injections being made when the patients were under light chloroform and other anaesthesia. A not infrequent result of the injections was "an intermittent heart beat, associated with a pulse of a weak and feeble character." In three of the cases the symptoms were very alarming, and there was intense pallor, temporary cessation of respiration, and greatly dilated pupils. All three recovered.

In the Proceedings of the Royal Society of Medicine, February 3, 1911, Dr. J. Blumfeld¹⁵ reports sudden collapse in the case of a boy aged seventeen, on whom he performed an operation for deviation of the septum. The patient was under the influence of chloroform and ether, and collapse occurred immediately after the injection of 6 minims of a 1 in 4000 solution of adrenalin on the operating table.

In the discussion following Dr. Blumfeld's paper, Mr. L. F. Thomas stated that he had had a case in which the sequence of events was similar, and he had attributed the symptoms to the adrenalin injection.

Mr. Carther Braine quoted a case in which both tonsils were removed under chloroform, a little adrenalin being injected into each tonsil just before removal, the injection being followed by immediate collapse, and death in a very few minutes. Mr. Harold Barwell, who performed the operation, decided at the autopsy that it was a case of "adrenalin death," and that the chief factor in producing the shock was the adrenalin injection.

14. Seymour Jones. — Brit. Med. Journ. 1912, I, 421.

15. Blumfeld, J. — Proceedings Royal Soc. of Med. 1910-11. Section Anaesthetics, p. 28; 1915. Section Anaesthetics, p. 87.

Mr. A. D. Fleming reported the case of an elderly lady, who underwent an emergency operation for appendicitis when she was in bad general condition, with a pulse rate of 140 and general peritonitis. Operation had been delayed too long, with consequent toxæmia. It was performed under general anaesthesia by open ether and chloroform, and after the operation it was seen that the patient was in a desperate condition, although it was thought that she would probably live for an hour or two. Intramuscular injection of 1 minim of a 1 in 1000 adrenalin solution was followed by sudden death within two or three minutes. Mr. Fleming is of the opinion that much depends on the strength of the solution of adrenalin, although in not a few cases faintness follows a solution of 1 in 1000, or even 1 in 5000.

Dr. McCardie, who also took part in the discussion, said that he himself had had cases, and had heard of them from others, in which serious symptoms had resulted from injection of a solution of adrenalin and cocaine, injected during anaesthesia. In an operation on the septum he had seen collapse immediately after the injection of adrenalin when a patient was fairly deeply under the influence of ether and chloroform, but never any sign of it when ether was used alone.

Mr. Seymour Jones reports three cases in which severe symptoms were in his opinion due to the action of adrenalin on a system already depressed by the action of chloroform. All three recovered. No cocaines were used, so there seemed to be no doubt that adrenalin was responsible for the sequelae of the injections. He has had a very extensive experience of combined anaesthesia, and is of opinion that the risk, which undoubtedly exists, is minimized if the slightest possible anaesthesia is being used during induction and for three to five minutes after, owing to the danger of collapse from adrenalin injections during even moderate or deep anaesthesia. Anaesthesia is induced with a mixture of chloroform and ether, in the proportion of 1 to 2. Induction should proceed slowly, and when the patient is barely conscious, that is, when the breathing is automatic, but the reflexes brisk, the analgesic solution is injected into the posterior part of the septum.

Dr. Depree,¹⁶ Anaesthetist to St. Mary's Hospital, reports the case of a man aged twenty-six, operated upon for deflected nasal sputum under chloroform anaesthesia. When placed on the operating table he was slightly under the influence of chloroform and adrenalin injected into the nose. Symptoms of severe collapse immediately developed, and although every possible method was tried to revive the patient death rapidly ensued. Ten minutes before the induction of anaesthesia, cotton wool, moistened with a 10 per cent. solution of cocaine and adrenalin, was inserted into the nostrils. No organic abnormality was discovered on post-mortem examination.

Dr. Goodman Levy,¹⁷ who had done a good deal of experimental work in this connection, in commenting on the paper published by Mr. Seymour

16. Depree.—*Brit. Med. Journ.* 1913, I, 879.

17. Goodman Levy.—*Brit. Med. Journ.* 1913, II, 627.

Jones, in which he states that in a hundred cases of submucous resection of the nasal septum symptoms of collapse followed the injection of cocaine and adrenalin in combination with chloroform and ether anaesthesia, but that all recovered, says that there is no doubt that the large proportion of recoveries is largely due to the fact that only a small quantity of adrenalin has passed into the circulation. Very few fatal cases have so far been reported, but it is by no means unlikely that many deaths which are really due to adrenalin injection have been attributed to other causes. In response to private inquiries made by Dr. Levy one surgeon, who had been in the habit of injecting adrenalin in cases of submucous resection of the nasal septum, when the patient was absolutely under the influence of chloroform, informed him that he had had what he termed two cases of "rapid death," both of which exhibited symptoms similar to those which are seen experimentally in "adrenalin death." This surgeon was inclined to attribute the fatal result in these instances to injection of the adrenalin directly into the circulation through a small vessel. The solution used in these cases was a "very few drops" of 1 in 4,000 adrenalin, and a solution of 2 or 3 per cent novocaine.

The extensive series of experiments on cats carried out by Dr. Goodman Levy has thrown considerable light on the effects of adrenalin when used in combination with chloroform or ether. When injected into animals under chloroform it has a very marked influence upon the heart, the heart beat being considerably accelerated and rendered more forcible. This effect varies in intensity according to whether the animal is under light or deep anaesthesia at the time the injection is made.

If the injection is made under light anaesthesia the ensuing reaction is very severe and almost invariably fatal, although in exceptional instances spontaneous recovery occurs. In the fatal cases, after the preliminary stage of an accelerated and forcible heart beat, the latter becomes inco-ordinate, and finally ceases altogether, its ventricles reacting at the adrenalin injection in a manner which he describes as "fibrillation." Fibrillation of the ventricles is brought about by the fact that the individual muscle bundles supplying them, which interlace in so many directions, begin to contract independently. This results in inco-ordination of the heart beat and cessation of ventricular function. A characteristic of many of these "adrenalin deaths" is persistence of respiration for a short time after the heart has ceased to beat.

In animals deeply under the influence of chloroform at the time of the injection the effect is much less severe, and if the dose of adrenalin is very small and anaesthesia sufficiently deep it may be so slight as to be almost imperceptible. Under these circumstances the animal, as a rule, recovers.

In animals anaesthetized by ether much larger doses of adrenalin were given without producing the symptoms described, and in control animals,

not under the influence of a general anaesthetic, the injection of adrenalin did not result in them.

From the results of these experiments, and in view of the cases reported in which severe and fatal collapse has occurred after the injection of adrenalin in patients under chloroform, Dr. Levy concludes that "adrenalin death" does occur in the human subject, and suggests the following possible explanations of the fact that it apparently does so occasionally in a series of cases:

1. If it is in all cases readily absorbed from the submucous tissues, the reaction may occur in individuals who are abnormally susceptible to the drug.

2. If equal susceptibility to small doses of adrenalin is the rule the results may be due to accidental injection directly into small veins.

From the investigations which have been carried out up to the present no definite decision can be arrived at as to which of these assumptions is the true explanation of the effects of adrenalin, and possibly both may come into consideration in individual cases. But the experimental and clinical work which has been done in this connection indicates that the reaction does not occur under ether anaesthetization, but it is still a question as to how far it is modified in cases in which the mixture of chloroform and ether is employed.

There is still some difference of opinion as to whether the danger incurred is greater under light or deep anaesthesia. Dr. Levy concludes from his experiments that in the former case the risk is immensely greater, and that it is therefore unjustifiable to inject adrenalin, however small the dose or however weak the dilution employed. On the other hand, Dr. McCardie states that he has observed faintness and syncope after the injection of adrenalin during moderately deep anaesthesia, and is of the opinion that it is desirable that the anaesthesia should be minimal. Dr. Blumfeld also finds it difficult to realize that the danger of injecting adrenalin is less in deep than in light anaesthesia.

It is clear from what has been said that there is at any rate great risk incurred by the injection of adrenalin or cocaine in patients who are under chloroform or other anaesthesia, and it is not improbable that collapse from this cause may explain some of the many sudden deaths which have been reported as due to chloroform or cocaines. Whilst there is no doubt that the haemostatic properties of adrenalin and cocaine and its derivatives are extremely valuable in many operations, I should like to protest most emphatically against their indiscriminate use in combination with chloroform or ether anaesthesia.

THE COMBINED USE OF LOCAL AND GENERAL ANAESTHETICS AND THE USE OF ADRENALIN

DR. D. J. GIBB WISHART.

Read before the Academy of Medicine, Toronto, Dec. 7th, 1915.

I have been asked to take part in this discussion because it is the operator upon the nose and tonsils who, for the most part, requires to consider the combination of local and general anæsthesia.

It is in the interest of the patient, and absolutely necessary for the operator, that the field be free from blood, and this can only be obtained by the use of local anæsthesia combined with ischæmia. Adrenalin is required to deplete the tissues of blood; the action of the adrenalin is increased and prolonged by its combination with a local anæsthetic, such as cocaine or novocain, and this combination permits also of the lowering of the percentage of each drug—that is to say, where cocaine and adrenalin are combined, the percentage strength may be reduced by at least fifty per cent.

I wish to register my protest against the increasing tendency to perform operations upon the nose and throat under general anæsthesia. In adults it is seldom necessary to resect the nasal septum, or remove the tonsils, to say nothing of operations upon the turbinals or the ethmoid, except with local anæsthesia. Any operator who wilfully yields to the desires of the patient, or thoughtlessly gets into a routine of using general anæsthetics, except in rare and selected cases, exposes his patient to a needless risk, and moreover, contributes to a weakening of the public conscience. The pain involved in the operations referred to is not greater than the pain endured in filling teeth, and I have performed the radical mastoid more than once under local anæsthesia.

Perfect ischæmia and anæsthesia may be obtained by carefully packing the nose with equal parts of a 10 per cent. solution of cocaine, and of a 1 to 1,000 solution of adrenalin, one hour before operating, and the sense of shock may be abolished, as Crile has shown, by the use of morphia combined with atropin, and, in selected cases, with Hyoscine.

Whenever possible, a solution of novocain should be selected instead of cocaine, as it has toxicity of one-tenth that of cocaine.

Deaths have occurred in this city, where local and general anæsthesia were combined, but in the absence of post-mortem examination by trained pathologists, I refuse to allow the fact of this combination having been used, to bear responsibility, nor have I seen a death when a highly-trained anæsthetist was employed.

I believe that it is in the use of adrenalin that our peril lies. Adrenalin causes a diastolic fall after two minutes, which lasts for about one hour.

and this is probably due to dilatation of the aortic orifices, with temporary regurgitation (Watson).

In an article upon the cardiac effect of adrenalin, by Levy, the author points out that adrenalin belongs to a group of substances styled Sympathomimetic, of which the action is limited to structures innervated by fibres of the sympathetic system.

The heart under chloroform is in an irritable condition, and this irritability is raised under light, and lowered under deep, anæsthesia. If adrenalin be injected when the patient is still under light anæsthesia, the ventricles begin to contract in a chaotic sequence of irregular beats, and presently the individual muscle bundles of the ventricles which interlace in many directions, commence to contract independently, and as a consequence the beat is no longer co-ordinate, and the ventricles are said to be fibrillating. In cats, the injection into a vein of a half minim of solution of adrenalin chloride will cause this ventricular fibrillation, which is generally permanent, and ends in death of the heart in asphyxia of its tissues. When full chloroform anæsthesia is used, however, such as is obtained by a 2 per cent. proportion of vapor to the inhaled air, ventricular fibrillation does not occur.

The same experimenter has been able to use five minims of adrenalin in a cat, without the production of ventricular fibrillation, although not without the production of irregularities of a lesser degree, where the anæsthetic used was ether.

On looking over the histories of two cases where death occurred in my own practice, the said death being attributed to the combination of local and general anæsthesia, I am forced to the conclusion that it was the injection of a few drops of adrenalin which was the cause of the disaster, and that the patients really died of ventricular fibrillation. This is borne out by the comparison of these cases with several that have been reported, one by Hubbard, and one by Flemming. In the articles by Levy to which I have referred, the author has investigated a number of cases where the introduction of an injection of adrenalin during the course of a general anæsthesia, generally chloroform, sometimes chloroform and ether, was attended by death, or marked cardiac irregularity. It may be the case, of course, that the patients may have been peculiarly susceptible, or that the injection was made directly into a vein, but the experiments of Levy upon his cats would go to show that adrenalin was the basal cause. It is necessary here to remark that in a case narrated by Dr. de Prenderville, under C. E. mixture, a solution of 1 in 1,000 adrenalin was sprayed into either nostril, and this application was followed in fifteen seconds by a typical train of symptoms, the patient being pulseless for two minutes, but eventually recovering. In this case there was no abrasion of the tissues, and surface absorption alone was responsible.

I have failed to note in my own cases, or in any that I can gain refer-

ence to, any such difficulty arising, where the directions with regard to the application of local anæsthetics and adrenalin above recommended were followed.

Adrenalin, therefore, should never be injected during the course of a general anæsthetic, unless it be perhaps in certain cases of shock, which I believe occur in connection with abdominal operations, and where the risk has to be taken, as a *dernier resort*. I have frequently employed a solution of cocaine or of adrenalin locally, during the course of an operation where the bleeding became a nuisance, without inducing any unfavorable symptoms. I would think it inadvisable, however, to spray either of these solutions upon the operating area. I am not afraid of using chloroform anæsthesia where I have packed the nose previously, provided it be full and continuous. The use of ether in throat and nose operations may increase the safety of the patient, but in certain manipulations, such as the removal of a foreign body from a bronchus, the use of ether complicates the process, and prolongs the operation, and chloroform produces the best results.

Another point must be noted in this connection, viz., the position of the patient. Operations upon the nose and throat are greatly facilitated by the use of the upright position. For this position, however, two factors are essential: 1st, the anæsthetic must be *begun* and carried on with the patient seated in the position desired for operation; 2nd, the anæsthesia must be light.

Finally, I have no fear of using local combined with general anæsthesia, even when adrenalin is required, provided I can trust my anæsthetist. I prefer, for this reason, to work always with the same man, whenever possible, and would advise my confreres to adopt this rule. It requires the most highly trained anæsthetist to administer anæsthetics in nose and throat cases, which are the cases, in nearly every instance, where a combination of local and general anæsthesia are required.

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MR. BARKER'S METHOD OF SPINAL ANAESTHESIA*

DR. C. H. HAIR

Read before the Academy of Medicine, Toronto, Dec. 7th, 1915.

To Mr. Barker, University College Hospital, London, England, must be given the credit for the present perfection of spinal anæsthesia as practised in many of the surgical clinics in Europe, especially in Britain. Of late many of the earlier difficulties owing to a better technique have been overcome, such as:

1. The prevention of deterioration of the anæsthetic by using ampules made of Jena glass.
2. The breaking of the needle in the spinal canal.
3. Localization of the solution after injection.

The anæsthetic now used consists of a solution composed of the following:

Stovaine	5 gms.
Glucose	5 gms.
Aqua dist.	100 gms.

Each ampule containing about 2 cc., of which only 1 cc. is injected; the remainder allows for waste or loss.

This solution has a specific gravity of about 1.023, which allows it to gravitate to the most dependent part of the spinal canal.

The needle now used is an ordinary puncture needle made of nickel with stilette that will bend if pressed on if the patient suddenly kinks the spinal column from pain or otherwise. The use of the nickel needle has done away with the danger of draining away the spinal fluid into the tissue if the needle is broken, and this method is particularly applicable to all methods of spinal puncture.

ADMINISTRATION.

The patient is usually placed on the side in a horizontal position, on a table with a pillow with an elevated head-rest. The shoulder resting on the table is used to raise or lower the upper part of the spinal canal by drawing the arm forward. The assistant, standing face to the patient's abdomen, forcibly flexes the knees to the face by passing one arm over the back of the neck and the other over the knees and approximating these parts, thus separating the spinous processes. The operator, who is seated facing the back of the patient (his eyes being about on a level with the spinous processes), places his index and middle fingers in the interspace between the second and third lumbar spines, the fourth being taken as in line with the crest of the ilium and with his right hand passes the needle directly through the skin, then upwards and inwards until the spinal canal is approached, when the stilette is withdrawn, the entrance to the canal being indicated by the escape of spinal fluid. A few drops is allowed to drain away, and

then 1 cc. of the solution is injected through the puncture needle. The position of the patient is then altered according to the side of the operation. If on one side, he remains there until feeling is lost in that leg, then turns on the back. By elevating the thorax, the solution will gravitate to the lower part of the canal, thus anæsthetizing the extremities. The duration of the anæsthetic is about forty-five to fifty minutes, and if successfully accomplished is ideal in its action.

THE AFTER-EFFECTS OF THE ANAESTHETIC.

1. Headache. This is very variable and usually depends considerably on the temperament of the patient.

2. Vomiting occurs occasionally during the anæsthetic stage and disappears as the effects go off.

3. Rarely diplopia. This after-effect seems to be hard to explain.

Spinal anæsthesia undoubtedly has a place where patients are not suitable for general anæsthetics, being particularly good in old patients where shock is of great prognostic value, and where kidney function is decidedly lessened. It is not necessary to mention a list of operations, but one in which it can be used with great success is in a prostatectomy, where usually both age and lessened kidney function are factors, or where marked relaxation of sphincter muscles is desired, besides nearly all short operations in the lower abdomen or upon the extremities can be performed with decidedly little anæsthetic effect.

GAS AND OXYGEN ANALGESIA

DR. H. R. HOLME, Anæsthetist to St. Michael's Hospital, Toronto.

Read before the Academy of Medicine, Toronto, Dec. 7th, 1915.

The term analgesia is usually applied to local anæsthetics, e.g., spinal anæsthesia or subcutaneous use of novocaine. On the face of this the subject of this paper may seem strange, since nitrous oxide cannot be used locally to produce analgesia, therefore I will endeavor to distinguish general anæsthesia from general analgesia.

First of all, the difference is one chiefly of degree. The early stage of any anæsthetic is general analgesia. Analgesia is the production of a state in the body whereby surgical operations may be produced without pain and without loss of consciousness. I propose to deal with this from one standpoint alone, *i.e.*, the clearing out of tender pulp cavities of the teeth in the dentist's chair.

I will not go into details as to the purity of N^2O , which of course is very essential, as most of the cyanosis, nausea, etc., has been traced to impurities.

The choice of machines is a very important matter. Any experience I have gained has been with S. S. White's machine. I had an excellent

opportunity to study this particular one, having demonstrated this machine to prospective buyers in the dental profession in this city for six months.

Seat the patient with head slightly forward and chin slightly dropped to allow of drainage of saliva. Adjust the nasal mask tight enough that it will stay in position without being held by the hand, but at the same time to be comfortable. Allow patient to breathe in and out for half a minute to accustom him to the mask and to assure him that he may breathe air even with the mask in place.

Suggestion will count considerably on the success of your operation. Take plenty of time and gain the confidence of your patient. Such suggestions as the following are valuable:

1. Have patient relax all muscles.
2. Place him in a comfortable position.
3. Explain that all the work will be done absolutely without pain and at the same time without loss of consciousness.
4. Also that if he feels that he is going to sleep to take two long inspirations through the mouth.
5. That if he feels pain to take several deep inhalations through the nose.

You see, then, that we have to depend considerably on the assistance of our patient.

It will take a minute or so to determine the right mixture for each individual patient.

In the White machine I have found that gas indicator at $2\frac{1}{2}$ -3 on the dial and oxygen at $\frac{1}{2}$ -1 is a fair average for all cases. Of course the gas bags must be three-quarters full and remain stationary at that to insure a uniform pressure between gas and oxygen. The amount of oxygen will depend upon any cyanosis which might develop. Some patients will require 25 to 35 per cent. There must be no positive pressure of either gas at the mask to insure that the breathing may be as near to natural breathing as possible.

The dentist is instructed never to use a gag or prop, because by so doing he will destroy any sign that the jaw may give of analgesia becoming anæsthesia, i.e., the mouth beginning to close because of rigidity of the jaw muscles.

It requires considerable practice to keep the patient at the one stage, but the secret is to foresee sufficiently far ahead what is going to happen, and very gradually increase or decrease your mixture.

I have been able to maintain analgesia for twenty-five minutes, with little or no disturbance to patient or operator.

Of course there are classes of patients upon whom it is useless to attempt to produce analgesia, e.g., alcoholics, very nervous women and children.

The advantages are many. Many persons will not have work done because of the pain, and they will not take an anæsthetic because some physician at some previous time told them never to take another anæsthetic for some reason or other.

Then there is the young lady who does not desire to have an anæsthetic in a dentist's chair, but if she is told that she will be conscious all the time, she frequently will consent to analgesia.

The two extremes to watch out for in analgesia are, hilarity on the one hand, due to too much oxygen, and unconsciousness on the other hand, due to too much gas.

ETHER*

DR. J. F. L. KILLORAN, Anæsthetists to Grace Hospital, Toronto.

*Read before the Academy of Medicine, Toronto, Dec. 7th, 1915.

Speaking generally, I consider ether the safest of all anæsthetic agents, with the possible exception of nitrous oxide. As the years roll on we are becoming more familiar with ether, its administration, and its dosage, its use is more widely spread, and it is used now in many cases where a few years ago it was contra-indicated. Impurities in the ether are responsible for many of its disagreeable effects.

The open and closed methods of administration represent a large field of argument. The chief objection to the open method is that the vapor inhaled into the lungs is cold, due to the latent heat taken up in its evaporation. The objection to the closed method is that the patient breathes his own exhalations over and over. The irritating effects are present in both. The open method uses up more ether, as some of it evaporates into the air, but I think that taking everything into consideration the open method is preferable.

Most surgeons prefer deep anæsthesia, as it enables them to do their work better, and that brings up a point worth mentioning. The deeper the anæsthesia, the greater is the relaxation, and in profoundly deep anæsthesia we get more or less relaxation of the vaso-motor system, which will allow the blood to collect in the large veins not protected by valves. This condition lowers the blood pressure, and enhances the shock, so that when the surgeon keeps calling for deeper anæsthesia, in complying with his request we are adding to the shock of the patient.

The pupillary reactions with ether are not constant. The small reacting pupil that we like to see during the operative stage is not always present, and I have often noticed a slightly enlarged non-reacting pupil during the whole stage of administration.

The preliminary use of nitrous oxide reduces largely the first stage. The use of chloroform as a preliminary is dangerous, because the first stage

is the most dangerous of all, and more accidents have happened in the first stage of chloroform than in ether. Still more dangerous is the preliminary use of ethyl-chloride, which in my experience has often caused a stoppage of respiration. By beginning with ether and using it slowly at first, and allowing a large admixture of air with the ether vapor, the respiratory mucus membrane will become reconciled to the irritation of the ether, and no more mucus will be formed than when nitrous oxide is used as a preliminary, and the ether is pushed rapidly after the patient is under the influence of the nitrous oxide.

By the use of morphine and atropine before the operation, the patient takes ether more agreeably, with less stimulation and with less mucus. Many people have a mortal dread of anæsthesia, and the previous use of morphia to a large extent removes this fear.

In cases like exophthalmic goitre, when the constitutional state is bad, wheeling the patient to the anæsthetic chamber and placing him on the operating table while conscious aggravates the mental excitement, and increases the pulse rate and nervous symptoms, and may bring on a highly dangerous condition. In these cases it is advisable for a period of a week or ten days preceding the operation, to familiarize the patient with the mask and ether, by a daily administration of a small quantity of ether diluted with alcohol, and gradually increasing the strength and dosage, until when the day of operation arrives the patient can be anæsthetized in bed with little or no excitement and worry. In this manner I have frequently avoided the unpleasant symptoms which some people show when they are first brought into the operating wing.

Washing out the stomach after the operation in many cases has a beneficial effect in relieving post-operative nausea. A few drops of aromatic spirits of ammonia also helps to relieve nausea.

THE METHODS OF RESUSCITATION IN ANAESTHESIA

DR. T. R. HANLEY, Toronto.

Read at a meeting of the Academy of Medicine, Toronto, December 7th, 1915.

The methods of resuscitation have been interpreted by me to mean the treatment of the dangers which arise during anæsthesia as well as the actual treatment of suspended animation.

I intend to bring to your notice some of the commoner dangers arising during anæsthesia and follow them up by suggestions which have proven in my experience to be most beneficial.

Broadly speaking, then, the dangers met with in anæsthesia may be divided into two groups:

(1) Respiratory failure.

(2) Cardiac failure.

The Causes of Respiratory Failure—

1. Blocking of the air passages by foreign materials, such as blood, vomitus, mucus, etc.

Treatment—must be preventive—

(a) *Always* ask the patient before beginning your anæsthetic about the presence of artificial teeth.

During the introduction try and prevent vomiting. If the patient does vomit, turn his head to one side and tilt the shoulder; if necessary lower the head of the table.

(b) *Mucus*.—If it is anticipated for any reason, such as bronchitis, tuberculosis, give atropine gr. 1 100 half-an hour before operation. If the patient does develop mucus and the accompanying cyanosis tends to become alarming, give the patient more air or oxygen and use more anæsthetic proportionately. If the patient stops breathing use Shafer's method of resuscitation.

(c) *Blood*.—Try to get it to drain out by placing the head well over to the side. Put a piece of gauze in the corner of the mouth. In mouth operations use Johnston's apparatus and pack the throat. In nose operations, such as radical antrum, place a plug in the posterior naso-pharynx.

(d) *Anatomical Abnormalities*.—Spurs, adenoids, goitre, etc.

(e) Spasm of the muscles at the base of the tongue. Spasms of the aryteno-epiglottidean folds in the larynx and general spasm of the respiratory muscles.

See that the head is in *the best possible position* for free breathing. Let them assume the natural position in which they sleep. Some patients are round shouldered and breathe better with a pillow under the head. In some cases it is well to place the nasal tube in position reaching as far as the upper border of the epiglottis. Sometimes, holding the jaw forward from behind the angle so that the tongue muscles are on the stretch, tends to raise the base of the tongue from the posterior pharyngeal wall—and will suffice. As a last resort, use the mouth gag and pull the tongue forward with a pair of forceps.

If spasm of the muscles of the larynx is due to a flake of mucus, which is sometimes the case, let the patient have a few breaths of air and *do not* push the anæsthetic. If due to irritation from strong vapor, give more air or oxygen.

(f) *Position of the Patient*.—Absolutely prone as in laminectomy,

trephining, cerebellar tumor, kidney operations, etc., the obvious treatment is to immediately change the position.

(g) *Toxic action of the anaesthetic.*

1. Early.—Relative overdose.

2. Late.—Overdose causing a paralysis of the centre in the medulla.

In either case, act quickly—open the jaws, pull the tongue forward, sweep the fingers around the posterior pharynx and see that no foreign matter is blocking the air passages. Try artificial respiration, and if air is entering the lungs no further anxiety may be felt on that point. If air does not enter, push the tongue forward from the base by placing the forefinger in the mouth and again try your artificial respiration. If that doesn't help matters, tracheotomy should be performed and artificial respiration carried on for at least one hour, providing the patient has not revived in the meantime.

At the same time as you are using Sylvester's method have an assistant use rhythmical tongue traction (Labordes).

(h) *Where* shock is anticipated, or the general condition of the patient is below par, it is well to start interstitial salines at the beginning of the operation, and not wait until the patient is *in extremis*.

(i) In sudden severe hæmorrhage, stop your anæsthetic, give your salines by the needle into the vein, and lower the head of the table.

(j) Exophthalmic operations, mastoids empyema, erect posture for nose and throat operations, use very light anæsthesia. Do not abolish the reflexes completely.

Cardiac failure may be due to:

1. Extrinsic causes other than overdose.

2. Toxic action of the anæsthetic.

Extrinsic causes.

(a) Fright—at the very beginning of the anæsthetic—a very common cause, you will remember, in pre-anæsthetic days; use morphia gr. $\frac{1}{8}$ - $\frac{1}{4}$ before the operation. Try always to win the confidence of your patient.

(b) Feeble condition of the patient from exhausting diseases, constitutional dyscrasia, etc. Proper choice of anæsthetic, care in the administration and proper preparation beforehand will obviate these to some extent.

(c) Shock from operation, such as a re-section of bowels, cutting the spermatic cord, rectal operations, etc. Reflex of threatened vomiting, especially with chloroform, and position of the patient must all be thought of and properly met.

Toxic action of anaesthetic.

1. Syncope in the early stages, more especially with chloroform, owing to relative overdose or cardiac inhibition caused by strong vapor irritating the laryngeal branches of the vagus nerve.

2. Later syncope from overdose, causing paralysis of the centre in the medulla or of the cardiac muscle and its intrinsic ganglia.

Treatment: Lower the head (invert children), open the mouth, draw out the tongue, and while you do Sylvester's method of artificial respiration have an assistant do rhythmical tongue traction of Laborde.

Have the nurse give whatever stimulants you may think necessary. I prefer camphor grs. 10, pituitary extract 1 cc., or strychnia gr. 1/10 in the order named.

If the abdomen is open, have the surgeon gently massage the heart.

Electrical stimulus to the side of the neck is recommended in the hope of influencing the phrenic nerve, but the result is doubtful, considering, as we must, the close proximity of the vagus.

The pulmotor, lauded so greatly a few years ago, has, I think, been relegated to the museum, but a new instrument has been devised which promises good results and will bear a thorough trial.

Injection of strychnia directly into the heart muscle may be done as a last resort, but I don't see that it has much to commend it.

ANAESTHETICS

E. W. PAUL, D.D.S., L.D.S., Toronto, Ont.

At the monthly meeting of the Academy of Medicine, December 7, 1915, the evening was devoted to the consideration of anæsthetics. This subject is probably of especial interest at the present time on account of a number of deaths having occurred, more or less recently, under unusual circumstances.

The papers were of a very high order, being handled in most cases by specialists in that particular phase of the subject, but were necessarily very short on account of the fact that there were about ten papers given during the evening. Consequently there was not sufficient time for a proper discussion, which was to be regretted.

The association of local and general anæsthetics is a very live matter for discussion on account of several deaths of healthy patients having taken place where the application of a local anæsthetic was followed by the administration of a general anæsthetic. Although the following was not discussed at the meeting, it might be interesting to state the reasons for using such a combination.

Shock arises usually from three causes:

1st. Fear and anxiety of the patient before the operation.

2nd. Pain suffered by the patient during the operation.

3rd. Traumatic injury or shock, caused by the cutting of the tissues and other operative producers, subsequent to the operations.

In order to lessen or overcome the first a nerve sedative, as bromural or morphia, is administered. The general anæsthetic takes care of the second, and by combining a local with a general anæsthetic the effect of

the third, is decreased or eliminated, and besides it is possible to operate under such light anæsthesia.

The rhinologist especially has been in the habit of packing the nose with gauze impregnated with a solution of a local anæsthetic for some time previous to the operation, and then following with a general anæsthetic. These are the cases where most of the accidents have occurred, and suggested the possibility that the association of the two methods was responsible. While some authorities dispute this, there seems to be a general impression that the adrenalin in the local anæsthetic is in some way responsible.

The administration of ether and chloroform and the different methods of administration of either were discussed by their different advocates, and none seemed disposed to change their allegiance or their methods. In fact, the thing that impressed me most was the great difference of opinion and the fact that very few definite conclusions were reached—this in spite of the fact that the opinion of the public is that the general physician can definitely and accurately tell whether it is wise to administer an anæsthetic, and also the anæsthetic to administer. While the truth of the matter is the ether man gives ether to every patient and the chloroform advocate administers chloroform. While this is true in a general way, it is also true that there is a discrimination made in many cases, especially by the expert anæsthetist. The relative merits of these anæsthetics were not discussed fully, although one physician said that he had at that time two cases of pneumonia following ether, which he believed would have been avoided by the use of chloroform.

STATEMENTS MADE.

Dr. A.—“No substitute equal to cocaine.” Many authorities dispute this. At all events, the anæsthetic properties of novocain are sufficiently marked for all surgical purposes.

Dr. B.—“A general anæsthetic should never be administered for a nose or throat operation.” This might also apply to dental operations, but we know that often the nature of the operation and the temperament of the patient render a general anæsthetic necessary.

Dr. C.—He had administered chloroform for the extraction of teeth in the sitting posture for twenty-five years without an accident.

Dr. D.—He had administered ether for thirty-two years without a death due to ether.

Dr. E.—“That in the administration of the anæsthetic the respiration is more important to watch than the circulation.”

CONCLUSIONS.

1. That it is not advisable to lower the vitality and the resistance of the patient by severe purging or extended starvation prior to the operation.

2. That only in rare cases clearly indicated was it wise to perform lavage (washing out the stomach) immediately following the administration of the anæsthetic.

IT PAYS TO CARE FOR THE SOLDIERS' TEETH

LIEUT.-COL. HENDRIE.

The report comes from Hamilton, which says:

With the large number of overseas men quartered here there is nearly three times as much dental work to be done as Capt. W. G. Thompson, in charge of the local clinic, and his small staff can attend to. The Hamilton Dental Society has undertaken to do what it can to help matters out. At a meeting last night it was unanimously decided that where a charge was made for work done for soldiers it should be twenty-five per cent. below the regular tariff.

In this connection Lieut.-Col. William Hendrie, who is back from the front, gave a timely interview. The colonel visited Dr. Thompson's clinic yesterday and expressed himself as well pleased with what was being done there, and also the way all the dentists are helping.

"Too much importance," he said, "cannot be placed upon the necessity of the men having their teeth properly looked after. Along the lines where my command was it was a common thing to have from thirty to forty men daily incapacitated on account of trouble with their teeth, and at places where there was no chance of remedying it. While the rations are good, bully beef and biscuits are hard on the teeth unless they are in proper shape.

"From the standpoint of economy alone it would pay the people of Canada if as high as \$50 per man was spent in seeing that their teeth are fixed. When you figure what it costs to train a man for a year and equip him you can appreciate what the waste is if he is not able to do his work when he goes to the trenches just because his teeth are troubling him."

PRAISES SOLDIERS.

The colonel spoke in the highest terms of the Canadians on the firing line. He said:

The Canadian soldier is known over on the British front in Flanders as the "handy man," for the reason that in the Canadian division there are men who have followed in Canada all kinds of trades, and if there is a call for a certain class of man to do certain mechanical work, it is try the Canadians. To give an instance. My own command in France was purely a horseman's job, but a call came from headquarters to know if I had in my command axe men, men accustomed to going into the forest or bush and taking out trees. Rather a peculiar request to make on a command composed of horsemen, but I was able to supply their wants, and to-day those men are in the forests of France taking out large timbers. That request was followed by another asking if I had any mining men—men accustomed to the use of high explosives, tunnelling, etc. This request was complied with, and two private soldiers, who had a practical

knowledge, got commissions in the British force in France. Another request for engineer officers who were conversant with the use of cement, was received; two of my officers volunteered, and they are now with the British force in France.

The impression amongst the higher commands in the British army was very favorable towards the Canadians, for the reason that there was nothing in the way and means required to carry on operations that they could not call upon the Canadians for men to do the work, and as this war at present along the western front partakes somewhat of a mechanical nature, the call for skilled mechanics in all branches of trades is constant, and the Canadians are much in demand, their training in Canada in civilian life helping towards this end.

Dental Societies

CENTRALIZATION OF DENTAL CLINICS

An extract from Dr. Cross's paper, read by Dr. R. J. Reade, at the Oral Hygiene Conference, Toronto, Dec., 1915.

When the board of the Forsyth Institute studied the question of giving the best possible service to the children and the public in general, they, after mature consideration, decided that a centralized clinic would really give better service than separate clinics, because they felt there were two general factors to consider: First, prevention; second, treatment. Prevention in their minds was largely a matter of education to the dentist, parents and children in oral hygiene, so that all might have a training to not only prevent disease in their own mouths, but also to prevent the transmission of diseases from mouth to mouth. To carry this out, lecture rooms, research rooms and most modern dental equipment were essential. Besides this, there is a certain psychological effect in having the children and parents brought together in a large institution. In such a place the prevention of disease can be illustrated in patients, equipment, water, air, anaesthetics, beds and waiting rooms.

Treatment can best be carried out in a clinic where the clinicians are all present, and where the equipment is satisfactory, and when it is centralized in one institution it should in itself be of educational value to the people. The hospital sets a standard of practice and education which elevates the profession about it. Only in an institution of this kind can orthodontia be properly practised. The removal of adenoids and a department of eye, ear, nose and throat are essential in conjunction with a dental clinic. It is cheaper to so centralize a clinic, because all the expensive equipment would be in use all the time, which would be partially idle in many of the special branches if supplied in localized clinics.

In Boston there has been no difficulty in transporting the children to the clinics, because nurses bring them in groups of twenty or more all at one time, which is a great economy. The institute takes care of all the children who cannot afford to pay dental fees. This point is decided on the basis of the earning power of the family. If the income of the family is more than \$4 per head per week, then they are not accepted in the clinic. A charge of five cents for each visit is paid.

Localized clinics are undesirable, because, first, there is great difficulty in controlling the operators; second, they cannot be brought up to an equal standard of efficiency; third, the expense of duplicating the plant; fourth, dentists when working alone waste a great deal of time in clerical work, which can be chiefly done by clerks in an institution; fifth, there is difficulty in regulating the quantity and purchase of supplies; sixth, the hygienic

condition in a local clinic cannot be made as satisfactory as one large central clinic.

Dr. Wallace Seccombe then read a paper on "Dental Clinics for Children."

ABSTRACT OF DR. SECCOMBE'S PAPER.

In Toronto the public school clinics were essentially for all the children. It was better, as far as possible, to organize clinics under the direction of the constituted authority of the State than under private organizations depending upon donations from private citizens. Institutions supported, governed and controlled by the State are more stable, and do not depend upon the whims of the individual, and are therefore more likely to be continuous and in the long run serve the public best.

A tribute was paid to the late Dr. W. H. Doherty, under whose guiding hand the dental clinics in Toronto were organized. At the present time the adult poor who are cared for by the Board of Health are under the direction of Dr. J. A. Bothwell, while the poor of the public schools by the Board of Education are under the direction of Dr. Wallace Seccombe. There are fifteen districts, with six schools in each district, and a clinic in each district, open from 9 o'clock until 12 noon every school day. The dentist begins at a salary of \$800 a year, with an annual increase of \$100 until he has reached \$1,200.

The nurse investigates each case, and has the consent of the parents before any dental operations are performed. The whole work is undertaken with the idea of: first, prevention; second, treatment. More and more the public school is becoming a social centre, especially among the poor. Parents and children meet there and look to it for guidance.

Education in health is quite as important as education in reading, and, therefore, can be best taught by the teachers, the inspector, the medical officer, the dental officer and the nurse. With the help of all of these factors brought to bear the problem of oral health is more likely to be successful than in one large centralized clinic, where there is no person interested and in touch with the home surroundings and conditions.

There is an oral hygiene grade given to the public schools of Toronto: First, excellent; second, good; third, fair, and fourth, poor. The teacher with the nurse makes the grades for the individuals, classes and schools. In this way there is developed a certain rivalry among the individuals, classes and schools. The present grading of Toronto is: 10 excellent, 55 good, 20 fair, and none poor. The publication of this is a help in stimulating an improvement of the children. The experience in the hospitals has taught them that outdoor patients are very hard to control, and often before a satisfactory treatment can be carried out they have to be put into the hospital. This is quite as true in a large centralized dental clinic as in the General Hospital. The pupils in the public schools have all the elements present to control them.

At the Forsythe Institute the cost of transporting the children and the charge of five cents at the clinic would mean at least fifteen cents for each treatment, which might be more than many a poor child could afford to pay. In Detroit the experience is that taking pupils away from the classes interferes with school work more than if they could be taken one at a time. Statistics obtained from children who attend a large clinic could not be looked upon as accurate or as valuable as if they were taken from all the children in a given school. There is economy in placing the clinic in the public schools, because the building is already there, and the salaries of operators and equipment are no higher than in a centralized clinic. Besides the dentist has the teaching staff to assist him with educational teaching and keep him in touch with the affairs of the school. To sum up the local clinic: First, it is less expensive; second, school holds control of children; third, assists in education; fourth, the child is taught good habits of hygiene under the guidance of both dentist and teacher; fifth, the statistics are more valuable because all the children are examined in every school; sixth, the school is a social centre and has more control.

DISADVANTAGES OF CENTRALIZED CLINICS.

1. Cost of transporting the children.
2. Children may have to be accompanied.
3. Lack of control.
4. Lack of school, home and clinic combined influence.

DISCUSSION.

Mr. Taylor, inspector of public schools in the city of St. Thomas, said that Dr. F. E. Bennett really should get credit for the advances made along oral hygiene in St. Thomas. Dentistry and teaching were really twin professions. He said that all backward children were usually traced to some physical defect, such as poor eyes, poor teeth, bad hearing or poor digestion. He concurred with the paper of Dr. Seccombe, and believed that every locality should be a law unto itself. In St. Thomas there was no general medical inspection, but nurses were employed to look after the children.

Dr. Struthers late chief medical officer of the public schools of Toronto said that after inspecting the clinics in Philadelphia and other American cities, he concluded that local clinics in the schools was the only feasible way to take care of the ordinary cases presented, and at the same time have the influence of the teacher. He paid a tribute to the foresight and energy of the late Dr. W. H. Doherty, who was the first chief dental officer in Toronto. At that time the superintendent of nurses, Miss Rogers, and Dr. Doherty came to him and suggested that dental inspection and dental examination were of no value unless such cases as needed treatment were taken care of. They said they wanted four clinics. Dr. Struthers, in reply, said that he was in sympathy with them, but had some doubt

if the Board of Education would agree to such an undertaking. However, they went before the Committee of Management and the clinics asked for were granted without further delay. In this connection he wished to give credit to Dr. F. J. Conboy, who was then chairman of the Board of Education, for having supported this and every other movement which seemed to be of advantage to public schools.

In reply to Dr. Cross's paper, he said that prevention cannot be as well carried out in a central clinic; the school is the second home of the child and place of education, the teacher, the nurse, the physician and the dentist are all there taking part in the child's education. Besides there are certain objections to going into large institutions for treatment. It is quite true that perhaps special cases, such as X-ray, orthodontia and major work, such as removal of tonsils, etc., had better be done at a central clinic. The matter of transportation in a large city is important, because of the expense and loss of time of the children from school and play, and the loss of time of parents or nurse.

Dr. Ross Thomas, London, Ontario, said that in London there had not been anything done to establish medical inspection, nor dental clinics. A short time ago the inspector called a meeting of the dentists and asked them if they could equip a dental office with some of their second-hand furnishings and instruments and take care of the school children. This did not appeal to the dentists, so nothing was done. There is a room provided for this work in three new schools which have just been completed.

Dr. Watson, of Georgetown, said that nothing had been done in their schools up to the present time. He asked that the dental cards used in the Toronto public schools might be placed in the schools for educational purposes, but the Board could not see their way clear to allow this to be done, while at the same time they were taking up subscriptions to buy art exhibits to put in the schools.

Dr. McDonald of Hamilton said that localized clinics were more home-like for the pupils and consequently they were more easily managed. There was a joint meeting of the Board of Education, Board of Health and the dentists out of which \$1,500 was provided and the chances are that something will be done before long. The work of Dr. G. J. Adams of Toronto is forcing the Board of Education to do something in Hamilton.

Dr. J. A. Bothwell, Toronto, said that he could see the necessity for both local and centralized clinics. In Toronto there was a central clinic for children and an adult clinic in each of the hospitals and no matter if there were one large central clinic it couldn't possibly do away with the hospital clinic because there are a great number of patients in the wards of the hospitals needing attention who cannot leave the hospital.

Dr. F. E. Bennett, St. Thomas, said following his suggestion in St.

Thomas there were nurses appointed and yet while there is no dental clinic the children are being cared for by the dentists throughout the city.

Dr. Sparks, of Kingston, thought that in small cities one central clinic would be more satisfactory. In Kingston there is one nurse who inspects the children twice a year. The Board made an appropriation from which to pay the dentists for taking care of poor children's teeth, but to the present time, the dentists have not asked for any of this money although the children are being cared for.

Dr. R. J. Reade, who read Dr. Cross's paper, closed the discussion by saying that the equipment and a large institution called the attention of the world to the place dentistry holds and stimulates as an educational factor an improvement in dentistry in all parts of the country, besides being a centre from which relative statistics and information can be gathered.

MANITOBA DENTAL ASSOCIATION.

At the bi-annual election of the Manitoba Dental Association the following officers were elected:

President—M. H. Garvin, Winnipeg, Man.

Secretary—Manly Bowles, Winnipeg, Man.

Treasurer—Arthur McInnis, Winnipeg, Man.

Registrar—C. Powers, Brandon, Man.; C. P. Banning, Winnipeg, Man.; A. W. Myles, Treherne, Man.

Dr. A. W. Myles was elected by acclamation as member outside of Winnipeg. The City of Winnipeg, Drs. Arthur McInnis and M. H. Garvin. Dr. C. P. Banning, Winnipeg, and Dr. Powers, of Brandon, were chosen by the Board to fill the vacancies caused by the enlisting of Drs. Morrison and Bray.

DEPARTMENT OF DENTISTRY, COLLEGE OF JERSEY CITY, RECOGNIZED.

At the meeting of the Board of Education of the State of New Jersey, held in Trenton on January 8th, 1916, the newly organized Department of Dentistry of the College of Jersey City was officially recognized, and the degree of D.D.S. (Doctor of Dental Surgery) was approved. The college was also highly complimented upon their good work and splendid progress.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII. TORONTO, FEBRUARY 15, 1916.

No. 2

DOMINION DENTAL COUNCIL, BRITISH COLUMBIA AND QUEBEC

It never has been clear to the dental profession outside of British Columbia and Quebec why these two provinces do not join the Dominion Dental Council. More than one attempt was made to interest the British Columbia profession in the Dominion Dental Council. Dr. Abbott and the late Dr. McGinnis made a trip to British Columbia but nothing came of it. At the last meeting of the Dominion Dental Council in Winnipeg a representative was present who seemed to believe the Council was of advantage to the profession of Canada. No definite action has yet been taken. It is difficult for those provinces now in the Dominion Dental Council to understand what possible objection British Columbia or Quebec could have to joining. In each case they must now look upon themselves as not really forming a part of the profession of Canada and having a voice in its progress and education. The present status of the Army Dental Corps was begun and organized by the national dental organization.

The dental profession of British Columbia has been for years the subject

of much criticism both within and without the province. The criticism, in our judgment, and from what can be found out from reliable sources, has been unjust. The Dental Board had conducted examinations and conducted its business in such a way as to invite criticism, but no irregularities have been shown. Just because a good straight examination which was no farce was demanded, many complained. No such complaint would be made against a similar examination in an Eastern province. Educational standards are not expected to be found as stringent in Western Canada as in the East, not so in British Columbia.

The standing of a profession is rightly gauged by the standing of its members. For good reason, a profession made up of a good number of men who advertise their skill and personal attainments and good looks in the daily press is not altogether accepted in refined circles. British Columbia has to-day the finest line of advertising dentists in Canada. It is said that there have been dentists from these offices who have no licenses appointed to the Army Dental Corps. Would not the co-operation with the other provinces be a help in preventing some of these wrongs? No Dominion Dental Council candidate would be a gross advertiser anyway. In many cases the Dominion Dental Council would be a great advantage to British Columbia, and in no possible way a disadvantage.

The position of Quebec is different from British Columbia. The first meeting of the Canadian Dental Association was held in Montreal. Each province except British Columbia was represented in the conferences which lead to the formation of the Dominion Dental Council. In fact, the Quebec dentists did a great deal to bring the profession together. Here it all seemed to end.

Before the Quebec Council can accept candidates for license, the Dental Act will need to be amended, and by arrangement between the Legislature and the Association, no change can be made in the Act without its initiation in the Association. Ever since 1906 the Quebec Dental Association has discussed the matter; it has been brought to a vote on many occasions, but never got enough votes in favor of joining the Council to permit the Quebec Council asking the Legislature to make the necessary change in the Dental Act. We know of no one outside Quebec who ever understood why the Association failed to give the necessary favorable vote. We hear tales of men talking on one side and voting on the other, of some who leave the meeting when this vote is called, and others again who at first opposed it, later favored it and now oppose it. It is too bad that such an important subject for the profession of Quebec should be used as a political football.

In the last issue of this journal appeared a letter from Dr. Nolin, President of the Quebec Board, which is the first public statement of the position of the Quebec dentists. The DOMINION DENTAL JOURNAL has no desire to be either inaccurate as to facts or unjust as to conclusions. It

stated in the November issue that the Quebec Dental Association "voted down affiliation to the Dominion Dental Council to show disapproval of Ontario's attitude on the bilingual question." As a matter of fact, the question was not voted down, but a resolution was passed as follows: "Resolved that the Board of Governors be instructed to affiliate this College to the Dominion Dental Council when it shall have been demonstrated to their satisfaction that French-speaking dentists enjoy in the affiliated provinces the same privileges granted English dentists in this province."

To say that the bilingual question, or more broadly speaking, the French rights in Canada, had nothing to do with the attitude of the meeting, in the face of Dr. Cowan's impressions as appear in his letter in this issue and the wording of this resolution, is beyond conception. Dr. Cowan's letter speaks for itself. What of the resolution? We are not aware of what privileges are granted English dentists in Quebec which are not granted French dentists in other provinces, except that the dental business of Quebec is done in both French and English languages. If, according to the strict wording of the resolution, Quebec does not join the Dominion Dental Council until French becomes an official dental language of every other province in the Dominion, then we predict that further discussion of the subject is useless. Because in every province there are French-speaking dentists, and if each province must make French an official language before Quebec joins the Council, it is expecting too much. Note the resolution; it isn't enough for Quebec to protect her own members who go to other provinces, but she sets out to protect the language of those French in other provinces who never saw Quebec, or never had anything to do with the Quebec Dental Association. They were born, raised, educated, lived and practiced outside of Quebec. If this resolution has nothing to do with the bilingual question, it is, to say the least, possible to make it related to it.

In the letter under discussion there is objection taken to the substitution of physics and chemistry or German for French in the preliminary examination requirements for the Dominion Dental Council. Below we print the D.D.C. Matriculation requirements; there it is clearly stated that no certificate is acceptable which has not been accepted by a provincial Board; next, sub-section (b), an approved university equal to a provincial university. Thus, matriculants of Laval, which couldn't fail to be an approved university, would be acceptable to the D.D.C. Such candidates might not have received an education in English at all, yet they would be accepted. Why, then, should English candidates be compelled to take French if French candidates, by the present regulations, are not required to take English?

It is the candidate's own lookout to be prepared to speak the language of the people among whom he intends to live and practice. It is the D.D.C. business to see to it that the candidate has a sufficient preliminary

education to understand and comprehend a professional training and be capable of serving the people in a professional sense where he is located. Then why force French on the English or English on the French as a preliminary training, because neither language is essential to a well-trained mind. A candidate who knows both languages has a decided advantage to be sure; he can attend either a French or an English dental school; he can practice in either a French or an English community or in a community where both languages are used. Either language is essential, not both. Let him know one.

There is no provision for professional examinations in French. Such provision is simple, and could be made when necessary. The questions can easily be translated into French and the answers, when necessary, translated into English to be read when the examiner cannot read in the French.

The Dominion Dental Council is now in existence over ten years, and has had a far-reaching influence on dental education and dental legislation in Canada. It has benefited every province because of its standards. It has brought the profession into prominence both at home and abroad. It will continue to be a dental benefactor, whether British Columbia and Quebec join or not. The only reason that the Council has for making efforts to have British Columbia and Quebec join is to make its influence for good wider. Successful negotiations could then be opened with the British Dental Association and the General Medical Council. Until these two provinces join, the D.D.C. cannot negotiate with the Empire in the name of Canada.

It is a good omen when the President of the Quebec Dental Association openly discusses the attitude of Quebec on the subject. Sunshine clears away the mist.

PRELIMINARY REQUIREMENTS.

(a) Preliminary examination of or matriculation into any institution in Great Britain or Canada recognized for the purpose of matriculation in medicine or dentistry by the General Medical Council of Great Britain.

(b) Matriculation into the Faculty of Arts of any Provincial University of Canada or other approved University of equal standing.

(c) The following certificates granted by the Departments of Education of the agreeing Provinces, viz:

The second class teacher or other High School certificate of equal grade and including the required subjects.

(d) The Matriculation or preliminary examination of any Dental Board or registering body in an agreeing Province which conforms to the standard set by the Dominion Dental Council.

All certificates named in this section must include Latin and one of the following subjects: (1) French, (2) German, (3) Greek, (4) Physics and Chemistry.

Certificates enumerated in sub-section (c) must reach (1) an average of 60 per cent., with no subject below 40 per cent., or (2) a minimum mark of at least 50 per cent. on each subject.

Certificates will be recognized only after being accepted and endorsed by the registering body of an agreeing Province for the purposes of Matriculation and registration.

NOTE.—Teachers' and High School certificates must be of the grades or class recognized for Matriculation into recognized Universities.

STEADY THEM

About five or six years ago oral sepsis as a cause of general diseases was at its height in England. It took over fifteen years of hard work by a group of dentists in London to persuade their medical friends that many cases of rheumatism, gastro intestinal affections, tonsilitis, naso pharangeal troubles and even tuberculosis were due to oral sepsis. When the physicians got it they got it hard and ran it to death for a few years. John Hunter, the British exponent of oral sepsis, addressed McGill medical students and the Academy of Medicine, Toronto, about four years ago. Since then there has been but one treatment for teeth, whether diseased or not—extract them. There are physicians in Canada advising extractions to cure almost every known disease. "Crazy" is the word. The latest is emetine to cure pyorrhea. Physicians are confidently telling patients that emetine taken internally or injected will cure pyorrhea. There is no evidence from dentists, who know what pyorrhea is, to substantiate any such view. If many of our prominent physicians do not know any more about other parts of the body than they seem to know about the mouth the medical course ought to be extended to ten years. Dentists who know whether mouth infections are present or not should steady the over-enthusiastic.

DR. F. E. BENNETT, ST. THOMAS, RE-ELECTED.

Chairman Bennett had the pleasure of receiving the largest vote polled for any candidate in either the aldermanic or school trustee fields. His public work on the School Board, as well as at the head of the Horticulture Society, has won for him a large place in the esteem of the electors of every division in the city, and yesterday's expression of that esteem could not but be appreciated by him.

Lieut. W. Trelford has been appointed Officer Commanding, Army Dental Corps, 2nd Division, with rank of Captain.

Editorial Notes

Dr. Clarence McIntyre, of Milton, has moved to Winnipeg to practice.



The French Government is making provision to appoint a thousand dentists to the army.



Lieut. W. Trelford, who has been second in position in No. 2 Division, is taking charge of this division since Capt. Hume has gone overseas.



In Toronto 6 schools were graded excellent, 54 good, 24 fair. Not a single school was graded poor. The order of merit is Brown, Roden, Duke, Annette, Lee, Western.



Capt. G. G. Hume, who has been chief dental surgeon in No. 2 Division since last June, has gone overseas to join Capt. Gow and Capt. Mallory at No. 4 Canadian General Hospital at Salonica.



Dr. P. R. McNellis, a dentist of New York, paid damages to Mr. Peck, of \$5,000, for allowing a third molar tooth to drop into the patient's throat, where it became lodged, causing severe illness for years.



As yet nothing has been done in Great Britain to acknowledge the standing and position of the Army Dental Surgeons. The dentist in England is hired on a contract basis and is not a part of the Army.



W. A. Bell, a laboratory mechanic, who has been making his living for years by practicing dentistry, was fined \$40.00 in the police court, in Toronto, on December 29th, 1915, for practicing without a license.



Dr. Jas. M. Magee, St. John, N.B., and Dr. Geo. K. Thomson, Halifax, N.S., have been transferred from the Canadian Army Medical Corps to the Canadian Army Dental Corps and given the rank of captain.



Dr. G. A. McGuire, M.P.P., the senior member of the Legislature for Vancouver, who was appointed campaign manager for the prohibition movement some time ago, has given up that position, and will devote himself to his private practice as a dentist. Dr. McGuire retires from the House at the close of the present Parliament, and will not again be a candidate.

In an article published in Brooklyn, N. Y., it is stated that American dentists are making fortunes in China, Egypt, Ceylon, India, Prussia and South America. The opportunity of making fortunes in South America, by practicing dentistry is practically confined to the dentist who can pass an examination in dentistry in the Spanish language. There is not much opportunity for English speaking dentists in South America.



Canon Cody read a letter from Surgeon-General Roberts, in St. Paul's Church, Sunday, January 16th, 1916, in which great praise was given to Capt. Geo. Gow and Capt. F. R. Mallory for the magnificent work they were doing in the hospital. The General said that they had seen and treated as high as ninety-nine patients in one day, and that there is a line of patients from a dozen to one hundred who are suffering from tooth troubles waiting their turn to be treated.



At a meeting of the Toronto Dental Society, January 17th, 1916, a letter was read from Capt. F. R. Mallory, who is now at Salonica. In it was a suggestion that if some money was sent to him he could give the maximum amount of relief to soldiers for the amount sent. Following the reading of this letter the President suggested that somebody pass the hat around the audience and members contribute a little fund to send to Capt. Mallory with Capt. G. G. Hume, who was sailing for Salonica in a few days. The collection amounted to fifty dollars, and no more than one dollar was accepted from any one.



The Dental Manufacturers' Club of the United States will hold an exhibit at the Auditorium Hotel, Chicago, on April 4, 5, 6 and 7, 1916. Preparations are under way for an elaborate, scientific and highly interesting educational exhibit, with table clinics and demonstrations under the direction of practical men from the Laboratories, assisted by experts, demonstrators and lecturers. The Auditorium Hotel will therefore be the scene of one of the greatest exhibits of dental manufactures, including equipment, furniture, materials and instructions ever shown in America.



Dental surgeons appointed in Military District No. 11, which comprises British Columbia: Lieut. H. A. Simmons, C.A.D.C., 11th Regiment, C.M.R., C.E.F.; Lieut. E. H. Crawford, C.A.D.C., 158th Battalion, C.E.F.; Lieut. E. L. Thompson, C.A.D.C., 62nd Battalion, C.E.F.; Lieut. F. B. Findley, C.A.D.C., 121st Battalion, C.E.F.; Lieut. H. J. Henderson, C.A.D.C., 88th Battalion, C.E.F.; Lieut. A. J. Thomas, C.A.D.C., 103rd C.E.F.; Lieut. V. D. Westcott, C.A.D.C., 67th Battalion, C.E.F.; Lieut. W. J. Rutherford, C.A.D.C., 72nd Battalion, C.E.F.; Lieut. T. H. Levey, C.A.D.C., 161st Battalion, C.E.F.

Correspondence

THE SECRETARY OF THE D. D. C. VISITS THE QUEBEC DENTAL ASSOCIATION

DR. A. E. WEBSTER,

3 College Street Toronto:

DEAR DOCTOR,—Your letter asking about my visit to Montreal received. I have been absent from Regina a great deal of late, and just got home again this morning. Please, therefore, pardon my delay in answering.

There is very little to report regarding the meeting in Montreal. The Board of Governors sent me several letters and wires asking me if I would come and explain the D.D.C. and give those present at their annual meeting some idea in regard to the present position of the D.D.C. Accordingly I went down. The letters and telegrams came from Dr. Stevenson. On arriving in Montreal I very soon discovered that the French and English races were divided almost according to their race. It was quite evident; in fact they did not try to hide it, that language, race and the Ottawa school case (whatever it is I don't know, and don't want to) was more of a deciding factor than the real subject in hand. However. I was accorded the most courteous treatment, and when the time came to discuss the subject I was given a very attentive hearing. I did my best to explain that we could not recognize the colleges in Quebec until Quebec recognized the D.D.C.; that we had founded the D.D.C. with the view to an absolute equality between all of the Provinces. I also stated that the regulations already in force in the D.D.C. automatically accepted the Province of Quebec and recognized all of the colleges in Quebec as soon as the Quebec Legislature amended their dental legislation to accept the D.D.C. I also stated that it would not be fair to Ontario or Nova Scotia if we recognized Quebec and gave their graduates standing in those two Provinces if they had not an equal privilege accorded them. I stated that the D.D.C. had been founded on the idea of an examination which required a standard just a little higher than the standard of the highest college. This statement raised a very emphatic protest. Dr. Nolin (I think) and several others claimed that the standard in Laval was higher than the standard of the D.D.C. Dr. Nolin submitted a statement of the time spent by Laval students in study to prove his claim. Dr. Nolin explained very fully the educational position of Laval. Beyond the objection to my statement that the D.D.C. was higher than the colleges there was no objection taken to the D.D.C. There had been considerable fear that American graduates of inferior standard could register in some of the other Provinces, take the D.D.C., and in that way work their way into Quebec. My explanation of the rules, however, seemed to be satisfactory on that

point; in fact, the D.D.C. committee appointed last year by their board had a printed report which fully covered this aspect of the case.

During the discussion several speakers referred to "Our Language," and in every case the speaker was very vigorously applauded. Several references were made to the Ottawa school case, and it appeared to me that because of the present existence of this case the present was not an opportune time to talk D.D.C. to the French-speaking people of Quebec.

I told them as well as I could that the D.D.C. had enabled us in the West to raise the dental standard, and that because of it the dental profession in the West occupied a very much higher professional and social position than it had ever done before. I also stated that we were prepared and willing to have every graduate of Laval or McGill, or any other Canadian college or university, come to Saskatchewan and be great big Canadians out there along with the rest of us.

At the close of the discussion a motion was passed, a copy of which I have not yet received. Consequently I can only give you the purport of it as I understand it. You understand the discussion was almost entirely in French, and consequently I could not get as full a grasp of it all as I should have. But as I understand it the motion was an instruction to the executive to open negotiations with the D.D.C. as soon as the D.D.C. secured to the students of Quebec the same privileges in the other Provinces as Quebec granted to the students of all Provinces. I asked what this meant, and I was told that the examinations were to be held in both English and French, the papers set in both languages, and, of course, examiners who could set and value papers in both languages. (As soon as I receive a copy of the resolution I will make a further explanation. At present I do not care to explain it too much, for I might not be absolutely right.)

I took the ground upon this that I, as secretary, could only put the regulations already existing into force; that I had no power to tie the D.D.C. up to anything that they had not specifically agreed to, and that the only thing I could do was to report their motion to the council, to be dealt with by them.

I noted the vote taken. It was quite unmistakable. In fact, one of the several speakers on the floor (and many times there were several speakers at a time, which was unique to me) said plainly, "You see, Dr. Cowan, the vote is English one way, the French the other." It was; there was no concealment of the fact, and I mention it because we might just as well recognize the actual situation.

If I had been King I could not have been treated better than I was. Their courtesy and general treatment, both French and English, was of the very best, and I feel that it is very regrettable that so pronounced a difference on the matter of language should exist.

Yours respectfully,

W. D. COWAN

LETTER FROM CAPT. HAMMELL TO DR. W. E. WILLMOTT

I was hoping to see you down at Valcartier, but I had to leave before you came. I believe all the original staff have left. I had a letter from Capt. Grant and he was telling me of the good time they were having and that Gallagher was the life of the camp.

I like it here in Bermuda. We are having beautiful weather. The roses, oleanders, are all in bloom. Everything like spring in Canada. When I came down first it was rather warm, but it is ideal now.

There is a great amount of work to be done here, but I may say nothing like Valcartier, or at least there are not very many plates required: not very many extractions, but plenty of fillings and treatments.



No. 1. "A hard one" snapped by Sergt. Legate without my knowing.



No. 2. "In misery."

The 38th are divided up into three stations, so it makes it inconvenient for me to attend to emergency work. I am still working at headquarters, but expect to be moving to one of the other stations in a week or so.

My equipment here is all field equipment, so it is not in it with Valcartier that way. I find it difficult ordering supplies. You have to order three weeks before you require the goods, because our boat service with Canada is not good.

I am sending you a couple of snaps, which will show the outfit. You will notice the chair is rather low for a tall fellow like me. It stays at that height. I could have it raised; then it would be too high for extracting, so I just have to make my back bend.

Well, I guess this is all this time. Kind regards to the rest of the staff at the college.

Yours truly,

D. H. HAMMELL, Capt.,
Prospect, Bermuda.



No. 3.



No. 4. Winter dress in Bermuda is white when not on duty

LETTER FROM SERGT. McLAUGHLIN TO DEAN WEBSTER

BELGIUM, December 8th, 1915.

DEAR DR. WEBSTER:—Just a few lines to let you know I am well and in the best of spirits. Everything is going fine.

We are at present located in a little Belgium village about four kilometers from the first line of trenches, and have only been shelled once since coming here. The dental profession has been very flourishing, and during working hours we are constantly on the jump. Since starting here last August we have handled two thousand four hundred and three patients. Our outfit is complete, but rather crude compared with some of the offices at home.

At night, time hangs rather heavy on my hands, as there are no attractions. If you have any old DENTAL JOURNALS or any literature in that line I would be greatly pleased if you would send me some.

I am enclosing one of the trench newspapers, and hope you will find it interesting. It was given to me by a wounded soldier in the dressing

station. If you would care for a few souvenirs, such as bullets and badges, I would be pleased to send them to you.

Trusting you are well and that R.C.D.S. is flourishing, I remain,

Sincerely yours,

ROSS McLAUGHLIN (Sergt.),

No. 2 Field Ambulance,

1st Canadians, B.E.F.

Obituary

DR. J. P. MARSHALL

Dr. Joseph Pickering Marshall, who has been for the past thirteen years a resident and practising dentist in Toronto, died on Tuesday, January 18th, at his residence, 577 Spadina avenue, in his *8th year. He had been ailing more or less following an operation which he underwent in the General Hospital in December, 1914, but had been confined to bed only since the previous Thursday. Death was due to a general breakdown.

The late Dr. Marshall was born in Boston Mills, Ontario. After completing his collegiate course he taught school for a number of years. In 1880 he entered Toronto Dental College. After his graduation in 1882 he practised in Shelburne until his removal to Toronto in 1903. In this city he built the residence which he and his wife have since occupied. He was married in 1886 to Miss Catharine Annabella Brown, of Nottawa, who survives him. He leaves no children. Dr. Marshall for a number of years was a member of the session in Knox Presbyterian Church.

DR. T. G. MOXNES

Dr. T. G. Moxnes, Winnipeg, Man., whose death occurred at the General Hospital early on Wednesday morning, January 12th, was one of the brightest young practising dentists who ever graduated from the University of Christiania, Norway. Dr. Moxnes, at the time of his death, was but 28 years old, and, graduating in dentistry ten years ago, he was, therefore, 18 at the time. Special permission to practice his profession at once was granted the doctor by the King of Norway on account of the brightness of the young doctor.

Dr. Moxnes was born at Reinnan, Levunger, Norway, March 11, 1887. He came to Canada, settling in Winnipeg, in 1909, at that time associating himself with Dr. W. Clarence Morden. Two years later Dr. Moxnes bought out Dr. Morden, and since then had been located at 620½ Main street.

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*The late Clarence R. Minns, D.D.S., L.D.S.,
Toronto, Ont.*

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Dominion Dental Journal

VOL. XXVIII.

TORONTO, MARCH 15, 1916.

No. 3.

Original Communications

CROWN AND BRIDGE WORK—SAFE AND SANE

A. W. THORNTON, D.D.S., L.D.S., Montreal, Que.

Read before the Second District Society, New York, December 13, 1915.

The title of this paper is not of my choosing; it was suggested by Dr. Hillyer. The fact, however, that your Society is giving itself to the study of the question during this winter season, is surely evidence that in the minds of many of your members the bridge work of the past has not all been safe, and that much of it has been far from sane. And I think that we are safe in assuming that the majority of the thoughtful members of the profession are like minded.

In every journal, at the meetings of dental societies, where "two or three are gathered together," the shortcomings, the failures, the evil results, of bridges, inserted by conscientious operators and paid for by patients—grateful for the time being—are the subject of painful and penitent confessions. Why? Has fixed bridge work failed to such an extent that its use will in the future be confined to those cases in which ordinary cleanliness may be maintained by the average person, with the expenditure of a reasonable amount of time and labor?

In a short article that reached me a little while ago from the pen of the editor of "Items of Interest," we are reminded once again of the railing accusations brought against crown and bridge work by Dr. Hunter of London, England. Dr. Hunter's accusations were met on this side of the Atlantic by refutations, in many cases more forcible than logical. Let us examine honestly the charges made and then weigh the evidence for and against the position taken. It was claimed that in many mouths in which bridges had been inserted, the bridges themselves were filthy, and incapable of being kept clean; that inflammation, and consequently recession of the gums, was present where ill fitting gold crowns had been adapted to suppurating natural teeth, and that pus was exuding from these inflamed areas; that alveolar abscesses, with fistulas opening into the mouth from so-called "treated" teeth, kept up the continual flow of septic matter; and that, as a result of these conditions many persons were suffering from

septic conditions, such as pernicious anæmia, rheumatoid arthritis, pyorrhœ alveolaris, intestinal troubles, etc.

By way of refutation it was pointed out that there were thousands of persons wearing bridges where these untoward conditions did not obtain, that the bridge work which caused the evils to which attention was directed had been inserted by men lacking skill, or knowledge, or common honesty. Wherein lies the truth?

I think we are safe in assuming that many of the evils attributed to faulty bridge work might have been due to some other cause, for men suffered and died before bridge work became the outward and visible sign of inward and invisible maladies. The fact that a boy does not contract small-pox, though sleeping with his brother who is suffering from that disease, does not prove that small-pox is not a contagious and filthy disease. It simply proves that in some cases the thing that usually happens may not happen. The fact that some bridges do not cause evil results simply proves that some bridges are so carefully made and adapted that they do not cause perceptible irritation; or if not carefully made and adapted, that greater resistance is manifested by some persons than by others. And so it will not do to say that the evil effects we see, consequent upon the insertion of a bridge, are to be found only among persons who have been treated by men lacking in skill, in knowledge, or in honesty.

There have been thousands of failures along the lines of which we have been speaking from operations by the most skilful, well read and conscientious men in the profession. Why? What features of our present methods are unsafe and insane? Without going into wearisome detail let us consider a concrete case. In a mouth presented for treatment the bicuspid and first molars have been lost from one side in the superior maxilla. What method of restoration would suggest itself to most minds? A fixed bridge,—a shell crown on the second molar, and a post and inlay in the cuspid. What preliminary steps must be taken to ensure safety and sanity for the completed operation? First, we must determine whether or not the molar is to be devitalized. Some operators always destroy a pulp before adapting a shell crown, others never do. If you determine to devitalize, what must be your next step? Make a skiagraph to determine the nature of the roots. If you make up your mind that the roots can be filled, you devitalize and fill them. Then what? Make another skiagraph to see if the roots are perfectly filled. You see the process—fill and skiagraph, skiagraph and fill, until the operation is perfect.

The same process must be employed with the cuspid, for there is a possibility that four or five millimeters of the apical end may be at right angles to the long axis of the tooth. If this condition should exist what are you going to do? Perform apioectomy and remove the portion that cannot be filled

Then the molar must be reduced, and a band fitted. How shall this be

done? Cut a shoulder two millimeters in depth around the cervical portion of the tooth, and under the free margin of the gum. Men have told us that this is the only safe and sane method. Have any of you ever tried it? If not, try it some day on a freshly extracted tooth, where none of the difficulties of the mouth are to be overcome. Most men will reduce the tooth and make a shell crown by some of the "systems" so extensively advertised. How do you restore the contact point? How do you produce the occlusal surface? By swaging or by casting?

When you come to the cuspid how are you going to make your inlay? With a square butt joint or with a long overlapping taper? You see, I think, what I am trying to establish—that there is absolutely no part of fixed bridge work that has reached a standard method of procedure, or one that does not fairly bristle with difficulties. There are almost as many systems as there are operators, but there is no system of which I have any knowledge which eliminates sufficient of these difficulties to establish a method safe and sane.

Then when you come to the intermediate part of the bridge, the teeth actually replaced, shall the occlusal surface be gold or porcelain? Shall a saddle be used covering a portion of the alveolar bridge, and giving a semblance of natural feeling to the lingual aspect, or shall the cervical part only of the porcelains touch the gum tissue and a so-called cleansing space be formed of a bevelled surface extending from the cervical tip of the porcelain to a point near to the occlusal surface? Shall ordinary facings be used which must pass through the fire in soldering, or shall we use removable facings, Steele's, Goslee's or Dimelow's?

Regardless of the method adopted is it possible to make a bridge, such as the one under consideration, which after insertion can be kept ordinarily clean by the average person with a reasonable expenditure of time and labor? I very much doubt it! Possibly some one is thinking that an inlay for the molar attachment would lessen somewhat the difficulties to be overcome, but we all know that inlay abutments possess difficulties peculiarly their own. I trust you will not misunderstand me—I do not presume to say that all fixed bridge operations are failures, comparative or absolute. But I do hazard the opinion that so many of them are comparative failures and so many are absolute failures that every man should pause and think, and think seriously, before inserting one posterior to the cuspids.

In order clearly to understand the matter and to arrive if possible at a common standing ground, let me state plainly what I consider the essential features of safe and sane bridge work.

1. It must be so constructed that the labor of keeping it clean will not be burdensome.
2. It must harmonize with its environment.
3. It must not involve the immediate or future loss of such serviceable

tooth tissue as would leave the patient in a condition worse than that for which treatment was attempted.

4. The preparation of the natural teeth, to receive the bridge, must not be conducive to serious pathological conditions.

5. The construction of the bridge must be such that its insertion will not produce serious irritation or inconvenience.

6. It must be simple in construction, so that expensive apparatus and great mechanical or artistic ability will not be necessary to produce it.

7. It must be so reasonable in price that average wage earners who require such work may avail themselves of it.

I have laid down seven essentials to bridge work so that it may come within the category—safe and sane. Is the standard established by these seven essential features unreasonable? If not, then, judged by the standard thus set up, how much of the bridge work now being inserted possesses these essentials? Which of them can we afford to ignore?

Is there a limit, short of the number of teeth in the arch, to the extent of a fixed bridge?

It is said, and truly said, that dentists are continually rushing to extremes in their methods of practice; that methods lauded to the skies to-day are excoriated to-morrow; that instruments and appliances that everybody is using in January are dead stock on the dealer's shelves in June. Well, what of that? It simply proves that they are willing to try out anything that promises an advance in the evolution that has given to the profession of dentistry its present recognition.

Time was, and not so very long ago, when a fourteen-tooth bridge was the crowning effort of a man's professional life. Such a bridge having four teeth as piers was a sure thing—a molar and a cuspid on each side of the arch being the ideal condition. But where, unfortunately, no molars were present, saddles were recommended and used, the entire bridge being retained by the two anterior piers. It would be safe to say that not many of such were safe or sane. They had a peculiar faculty of "loosening up" some place. Then screw-nails were advocated to facilitate the removal of such pieces for repairs, "and so forth." No one to-day is inserting such bridges, unless, perhaps, the men who are being guided by the advice of some salesman who advocates in some dental journal the advisability of dentists taking a course in "salesmanship." Every sane man to-day recognizes the fact that there is a limit to the extent of a safe and sane bridge, although it may be difficult, or indeed impossible, to fix that limit exactly because of the many factors entering into the problem. The general health of the patient, the force capable of being exerted by the muscles of mastication, the degree of cleanliness observed by the patient in caring for the mouth and teeth, the skill of the operator, etc.—all of these things must be considered if we are to approach to anything like success in our operations along the lines under discussion.

But there are some general principles which should guide a man who wishes to serve his patients honestly. It is always a difficult problem to keep the mouth and teeth clean. This difficulty is increased in direct ratio to the extent of the foreign matter inserted as a fixed appliance. I ask you honestly as men in active practice, do you think it is possible to make any kind of a fixed bridge supplying fourteen teeth which can be kept clean with a reasonable expenditure of time and energy? I want to say candidly that I never saw such a bridge.

Then there is another principle involved. Perhaps I cannot better illustrate this principle than by using the words of an advertisement in one of the recent journals drawing attention to a particular "system": "If your bridge work interferes with the mobility of the anchor or pier teeth, then your bridge work is inimical to the health of the patient." "Teeth move in function, and pier teeth must have the freedom of individual tooth motion, in all directions." A page advertisement in one of the dental journals seeks to impress and make plain that truth. Briefly put, this is the truth to be kept in mind: Teeth have individual motion. If a number of pier teeth be joined by a rigid appliance, the motion of an individual tooth must result either in loosening the bridge from one or more of the pier teeth, or in loosening one or more of the pier teeth from the containing alveolus.

When such a bridge is inserted, about the only question that may be in doubt in regard to it is—which will give way first, the cementing medium or the union between the root of the tooth and its alveolar socket?

There is another problem which enters into the extent of fixed bridge work, namely, the question of devitalization, to which reference will be made further on.

But this question must be seriously considered and settled by the profession: Is it possible to supply missing molars and bicuspid by a fixed bridge which will possess the essential features to qualify as safe and sane? In such case one of two principles must be employed. We must, as is usually done, make use of a so-called cleansing space, or we must cover the alveolar ridge with a saddle and restore the lingual aspect of the missing teeth with some suitable material.

Is it necessary to say a word about self-cleansing spaces as they are usually constructed? In a close bite (that is where the natural organs are short) it is simply impossible to make any such space which will be anything more than a shelf for the lodging of all the filth which mouth conditions and mouth function may give rise to. In cases where the teeth are long, the difficulty, perhaps, is not quite so great, but even in the most favorable cases, and when the bridge is most perfectly constructed, the task of keeping all parts of it clean will tax the ingenuity and patience of most people.

The practice of covering even a small portion of the alveolar ridge

with a saddle has never been very generally adopted. To fit it close to the gum tissue invited irritation, with its attendant ills, and to leave a space between the saddle and the alveolar ridge was too evident a trap for belligerent bacteria.

The question then arises, should fixed bridges not be limited to the region including the cuspids and incisors, or to those forms of bridges the construction of which admits of cleansing by ordinary means. Personally, I think they should.

The question of devitalization was incidentally touched upon a few moments ago, but its importance in relation to the question under discussion merits very careful thought. In harmony with the title of the paper, we will consider it under the three heads—First: Is it safe? Second: Is it sane? And third: Is there a limit here also?

To arrive as quickly as possible at the conditions due to devitalization, let me quote a sentence from the writings of the late Dr. G. V. Black in his work on Operative Dentistry. Dr. Black says: "A tooth from which the pulp has been removed seems never again to completely recover; even though the person has not recognized the difference in the ordinary use of the teeth, it shows in these trials (here Dr. Black is discussing the pressure which the teeth and surrounding tissues are capable of withstanding, as illustrated by the use of the grapho-dynamometer) the difference is generally considerable, though there are wide variations." There is, perhaps, no operation which we are called upon to perform about which more has been written than upon the question of treating and filling devitalized teeth. But all that has been written has not straightened a single tortuous root, nor enlarged a single constricted canal, nor rendered a single peridental membrane less liable to inflammation from putrescent tissue which cannot be easily removed because of physical hindrances.

I cannot hope to add anything to what Black and others have said concerning devitalized teeth. We know these facts from personal and oft-repeated observation:

1. That to properly devitalize and fill a tooth involves much difficult and painstaking labor.
2. That it is physically impossible properly to fill many teeth in the condition obtaining when they present for treatment.
3. That devitalized teeth are incapable of withstanding the strain or pressure due to mastication as efficiently as teeth with a vital pulp.

From these and other well-known phenomena it is safe to infer that devitalizing a tooth reduces its functional power, as well as its power of resistance, and renders it increasingly liable to those pathological conditions which render its continued retention problematical.

A phrase used in some of our dental colleges in teaching dental pathology very aptly expresses the idea: a devitalized tooth is spoken of as a "lame tooth." With that thought in our minds, we may, I think,

reach a direct answer to the question regarding devitalizing: Is there a limit here also? And our answer is, That no tooth should ever be devitalized unless for the most urgent reasons. Of course, in cases of excessive caries, involving the pulp, we devitalize without hesitation, but we are then acting on the safe and sane assumption that to retain a tooth with a functional power less than what its maximum should be, is better than to lose its power and place in the dental arch completely.

This brings us to a position that every man at some time must settle for himself in some way, viz: In adapting shell crowns to molars or bicuspid, is it necessary to devitalize? My own opinion is that in the vast majority of cases, I would say at least ninety per cent., proper preparation cannot be made without devitalizing. My opinion is based on our experience at the hospital clinic. In the majority of cases where a shell crown is to be adapted, students will ask the question: "Shall I devitalize this tooth?" My answer is: "Try it first, and if the pain becomes too excessive, then devitalize." In nearly all cases we have to resort to devitalization.

After careful observation, both in private practice and in connection with hospital clinics, I am convinced that the insertion of fixed bridges in the bicuspid and molar region, involving the removal of the pulps of a number of teeth (which might otherwise be retained in a vital condition), is far from being the best service we can render to our patients.

There is another phase of this question which I have never heard raised in any discussion and have never seen mentioned in any journal or textbook, a phase, perhaps, not second in importance to anything which has been mentioned. I have been teaching this subject for thirteen years, and I have visited many of the colleges, both in the United States, Canada and in Europe, and I think I am within bounds when I say that but a very small proportion of all the students turned out of our colleges are prepared to do even the simplest kind of bridge work in a manner that by any stretch of imagination could be termed safe and sane. Nor is this at all to be wondered at when you consider the trying, tedious labor of preparing the teeth to receive a bridge, the mechanical skill necessary to make an appliance to harmonize with the handiwork of Nature's divine artificer, the necessary knowledge of physics, metallurgy and porcelain, the method of combining substances so unlike as gold or platinum and porcelain, the artistic ability to carve and fashion an appliance to harmonize with the various modifications and conditions of the natural teeth. Is it any wonder that so few are able to measure up to any degree of success?

Lest any uncertainty arise regarding my own position on the questions raised, permit me to recapitulate:

1. Should the extent of fixed bridges be limited in extent? My opinion is that fixed bridges should be limited in extent to the regions including the

cuspid and incisors and to those forms of bridges the construction of which admits of cleansing by ordinary means.

2. The question of devitalization: Is it safe? Is it sane? Is there a limit here also? If we accept Black's teaching: "A tooth from which the pulp has been removed seems never again to recover," then we are forced to the conclusion that devitalization should be limited to those cases in which the diminished efficiency of the devitalized tooth or teeth is more than compensated for by the increased efficiency of the remaining natural teeth and the appliance attached to the devitalized tooth or teeth.

Will the criticism be made that I have been destructive rather than constructive? Possibly some will be inclined to say that I have suggested the limitation of fixed bridge work without suggesting anything to take its place. And yet by inference you may deduce the answer to such criticism. If fixed bridge work is to be limited in its extent, then, naturally, the adoption of removable appliances must be extended. I will not attempt to go minutely into that subject. With the means at our disposal now of limiting the amount of foreign matter in making small partial plates with the various attachments with which you are all familiar, I am convinced that safer and saner methods of practice are now within reach of the man doing work for the ordinary people of any community. The use of easily applied materials very closely simulating the appearance of the natural gums will, I believe, give a great impetus not only to prosthetic work generally, but to safe, sane, clean, easily made, comparatively cheap removable appliances.

PRESIDENT'S ADDRESS

A. J. McDONAGH, D.D.S., L.D.S., Toronto, Ont.

Read before Annual Meeting of Canadian Oral Prophylactic Association,
January 20, 1916.

Gentlemen,—Another year has gone around, a momentous year in the history of the world; the events which have taken place in the year just past have had a wonderful effect on every phase of human society, and we in our little society unfortunately have not escaped the far-reaching influences resulting from the world's greatest and most sanguinary struggle.

We have been hampered in more ways than one, and we have been deprived of the active co-operation of several of our best members. Doctors (now Capt.) Gow, Capt. Mallory and Capt. Hume have taken up the cause of their country, sacrificing themselves and their practice, and are now helping the poor soldiers who are fighting at Salonika. We wish them all success and hope they will soon return and be again happy, healthful participants in the work of this Society.

In the last year we have also lost three good friends by death—Dr. J. B. Willmot, the respected and worthy Dean of our College, was a friend of the Association from its inception, and Dr. Doherty, whose presence we were fortunate to have with us at our last annual meeting, and also Dr. Minns, who was just recently a member of our Association. The loss of friends such as these can never be repaired.

As I said in the beginning, business conditions in the last year have been very much disturbed; in fact, for a time we had difficulty in doing any business at all. Last year you were good enough to elect an Advertising Committee, which would act in conjunction with the Executive. That committee formulated an excellent scheme of advertising, got all the information necessary and the contracts all ready to sign, but just when we were on the point of signing the contracts and putting the fruits of their labors to the test we were confronted with the unfortunate condition that we could not get enough goods to supply the demand. Kent & Son, having got contracts from the Army to supply brushes to them, and having, of course, lost some of their employees, have not been able to supply us with our brushes.

Lyman Bros. reported to us that, although they had seven hundred gross of tubes on order in the Old Country, they could not get one to put up Hutax Paste, and consequently we could not get the paste, so that advertising to create more business was out of the question.

Just about that time we came in contact with a gentleman, Mr. Greatrix, who is with us here to-night, whose services were available and who was willing to promote the good of our enterprise and to manage the business for us. Through Mr. Greatrix' efforts principally, we have been able to induce Lyman Bros. to get a sufficient quantity of tubes

from the United States to supply the immediate demand, and through him, also, we have given a supplementary order to the Dupont people, of France, for one hundred gross of brushes, to be delivered as soon as possible; however, that will take time; in fact, it will be some time yet before the supply of our goods will be normal.

Notwithstanding all these drawbacks and the many factors which have militated against our progress during the past year, the sale of our brushes has increased by the substantial total of one hundred and thirteen gross, that of our paste and powder, forty gross.

In our Financial Secretary's report you will find there is one item left out, which could not be put in because the account for that item was not straightened up by the time of the annual report, and that is, at Christmas time, we donated powder and paste to about seventeen charitable institutions in the city, of a retail value of something over \$175.00—the cost to us, of course, being less than that, as we got them at wholesale prices.

Our Educational Committee of last year and year before last has been working under difficulties, but our Secretary, Dr. Broughton, has been able to do a good deal of the work and has been able to assist the Educational Committee. The committee has been handicapped this year because Dr. Hume, who was a member, had to go to the military camp, and Dr. Grieve, the Secretary of the Committee, was forced to take up Dr. Hume's work at the College; besides, unfortunately, Dr. Grieve had the affliction of his wife dying, and through that, also, an extraordinary burden laid upon his shoulders.

This coming year your Executive hopes that the Educational Committee which you will appoint will undertake and do a great deal of the work which has devolved upon the Executive up to the present time; in fact, we hope to carry out the suggestion made by the Educational Committee that they meet at the same time and with the Executive.

It has been suggested that this Association provide a certain sum of money as a permanent endowment for research, and your Executive respectfully request that you express an opinion on that subject this evening. The Educational Committee will report the work done throughout the Dominion.

I want to thank the members of the Society for their loyal support in the past, and particularly the members of the Executive Committee, who have, as usual, thought no work of the Society a burden. I want, also, to thank the members of the other committees and the auditors for their services to the Association.

Dental Societies

REPORT OF EDUCATIONAL COMMITTEE OF THE CANADIAN ORAL PROPHYLACTIC ASSOCIATION, TORONTO

To the President and Members of the Canadian Oral Prophylactic Association:

Your Educational Committee begs leave to report as follows:—

During the past year conditions incidental to the greatest war the world has ever known have made it difficult to accomplish as much in an educational way as might be desired. Nevertheless, considerable progress has been made along oral hygiene lines in many parts of the Dominion by committees and individuals working in harmony with and through the aid of our Association.

The C.O.P.A. has been able also to "do its bit" by helping in various ways the dental department of the army. Contributions were made in the way of extra equipment to the Dental Corps of Toronto University Base Hospital, McGill University Base Hospital, Army Service, etc. A cash donation of one hundred dollars was also made toward the Army Dental Fund of the Canadian Dental Association. Your Association also rendered some assistance in the formation of the Army Dental Corps as a separate unit, which promises to become a most efficient and valuable arm of the Service, having grown already to considerable proportions. Many appointments have been made, and a host of good men are working constantly in the alleviation of suffering amongst the troops in Canada, England, France, Belgium, and even in far-away Greece.

Contributions in the way of Hutax brushes, paste, etc., have been made to hospitals, schools, etc., at much below cost price, the institution paying the wholesale price and the Association then refunding a certain percentage, bringing the actual price paid for these articles down to a very low figure.

Lantern slides and the moving picture films, "Toothache," have been shown in many parts of the Dominion. The Association owns two of these films, one of which has been loaned to the Ontario Provincial Board of Health, and has been in constant use.

The other one is available for the use of any ethical dentist who desires to utilize it for educational purposes.

These films have proven to be very popular, and much good has been accomplished as a result of their presentation to the public.

A number of letters herewith will give some idea of the work which is being done in different parts of the Dominion.

It is worthy of note that the Legislature of the Province of Quebec

has shown itself to be sufficiently cognizant of the importance of mouth hygiene to appoint a dentist to the Provincial Hygiene Board.

It is pleasing also to learn that the City of Montreal has made a good start in the matter of dental inspection in the schools.

Your committee is seeking to spread the influence and help of this Association over as large an area of the Dominion as possible. If a still larger number of the dentists practicing in Canada could only realize that the total income derived by this Association from the sale of Hutax products is used for charity and the education of the public in the care of their mouths and teeth, the boon to the citizens of Canada would be second only to a successful termination of the world's war. Your committee realizes that it has a wonderful opportunity for good, and would earnestly ask the assistance of every dentist in Canada.

In the Province of Ontario there is a well organized oral hygiene committee of the Ontario Dental Society, and as a result, your committee has directed its energies to other provinces.

Following are letters received from different parts of the Dominion:—

From Dr. J. E. Black, Province of British Columbia.

Dear Doctor,—

Dr. Minogue has been appointed chief army dental surgeon, with headquarters at Victoria, and has just handed me your letter, with request for me to reply.

The "toothache" film, which you so kindly loaned us, was exhibited in between twelve and fifteen theatres in the Province—in two theatres in Victoria, three in Vancouver and two in New Westminster, besides once in the various towns of note in the mountains. From reports sent me, one splendid result is more interest taken by parents in the care of their children's teeth.

I might also mention that, as a result of the work of the school dentist, oral hygiene lectures and the enthusiastic work done by the school nurses in instructing children in the proper use of the tooth brush, there is noticed a very marked improvement in the condition of the teeth of the pupils in all schools, this fact being commented upon by frequent visitors to the schools. Dentists all over the Province are paying more attention in their practice to prophylactic treatment.

We shall always be glad to keep you in touch with the situation here.

Yours truly,

JAS. E. BLACK.

*From Dr. Leslie Wright, Dental Inspector in Calgary Public Schools,
Province of Alberta.*

337 Eighth Ave. West, Calgary, Alberta, Nov. 12, 1915.

My Dear Doctor,—

Thanks for your letter of the 8th inst., to hand to-day. At the offset,

let me say that I am wholly and solely for Educational Dentistry, and I feel I cannot do enough for the "Oral Hygiene" movement, in Calgary in particular, and Alberta in general.

Regarding our work in Calgary, I might say I have about completed a plan to have moving pictures for our schools; I am getting the use of a machine, and by using a portable asbestos room for it, also screen, we can take it from school to school. We purpose showing oral hygiene films, as well as educational films, such as "How Pottery is Made," "Cranberry Industry in Cape Cod," etc. By this means I hope to teach the children, the teachers and the parents something about the diseases of the teeth and how to prevent them. We also have an extension lecture club here, and lectures on various subjects are given for the public in the Public Library, the schools and outlying districts. As soon as I can get slides, I purpose giving illustrated lectures about every two weeks under the auspices of the club.

Regarding a Provincial Committee, I heartily approve; I should be glad to act as Chairman or any capacity where I can be of any service. I might say, I am now working out plans to present to the Department of Education of Alberta, whereby oral hygiene will be given prominence and form part of the regular school work. I also have plans to give a regular course of instruction in oral hygiene to students attending the Normal School. I believe this latter way will do a great deal to further the gains of oral hygiene in Alberta. Think of the hundreds of children who will be benefited when these Normal students go out to teach.

Regarding expenses for "interesting other towns," I might say, if your Association will set aside a small appropriation for me, just to defray travelling expenses, I will be glad to give you an itemized statement of the expense, also the results of our efforts. The amount of work we could do would be in ratio to the amount appropriated for meagre expenses.

Will you please send me samples of all sizes of Hutax tooth brushes, as I wish to take up with the School Board the question of supplying them.

Fraternally yours,

LESLIE WRIGHT,
Dental Inspector.

A Later Report from Dr. Wright.

337 Eighth Avenue West, Calgary.

Dear Doctor,—

Your letter of December 8th was very welcome, as pioneering in any line of work is not very encouraging, and encouragement helps one to surmount many obstacles.

Our work here is going very satisfactorily indeed, and we are already reaping the fruits of our labors. The School Board and Dental Club of this city are behind me strong, and so I look forward to a "good time coming."

The motion pictures in our schools were a grand success. We bought a portable fireproof booth, rented a 6A Powers motion picture machine and hired a licensed operator and electrician, and gave shows in the assembly halls of all our schools. The pictures were large and very plain, and the children were very attentive. The total cost (including purchase price of booth) was only \$70.00, which was surely nominal when 8,000 children saw the pictures. We used your Toothache Film first, then 1,000 feet Educational on "Asphalt Industry," 1,000 feet Comedy, and lastly "Oral Health" film, which we rented from the New York Society at Rochester. I believe I have firmly convinced the School Board of the great future for motion pictures along educational lines.

The "Oral Health" film I refer to is looked after by Dr. A. W. Smith, 33 Chestnut street, Rochester, N.Y. It is an exceptionally fine picture, and if you will pardon a suggestion, I think we ought to own one like it here in Canada. Everyone was very much impressed by it.

I am at present writing a series of articles on the care of the teeth for one of our newspapers.

I have a great scheme to supply a long-felt want to rural communities of Alberta through the schools. My idea is to make the school-house a social centre. This can be done by motion pictures, thus allowing us to work an oral hygiene propaganda, as well as subjects on Child Welfare, Anti-Tuberculosis, Art, Literature, etc., using new fireproof machines operated by batteries, the profits (at 10c. admittance) going to establish a library of films for the Province. I expect to lay this scheme before the Department of Education and Extension Bureau of Alberta University in the near future.

If I only had time, I could inaugurate a number of advances for the cause of oral hygiene in this Province, and even the whole Dominion. If my finances would allow, I should very much like to address your Association for the good of the cause, as I am first an oral hygienist, and lastly a dentist, not that I love dentistry less, but that I love oral hygiene more.

With all good wishes for the ensuing year, I am

Fraternally,

LESLIE WRIGHT,

Dental Inspector.

P.S.—We are now through with "Toothache" film; thanks for its use. Please advise me where to send it. We will appreciate use of lantern slides as soon as they are ready.

L. W.

From Dr. A. W. Lane, Province of Saskatchewan.

Moose Jaw, Sask., Jan. 12, 1916.

Dear Doctor,—

Replying to your favor of 18th inst. re any activities along oral

hygiene lines in Saskatchewan, will say that there is very little to report that I know of.

I believe there is a Dental Inspector of Schools in Regina, who is devoting full time to the work.

Owing to the demands of my private practice, I felt compelled to resign my position as Dental Inspector of Schools here, Jan. 1st.

During my two years and a half of service have made at least one complete inspection of the school children of the city each year, and also gave talks suitable to each grade on oral hygiene. I also did the work for those unable to pay for professional services.

As to conditions found in the mouths of the school children here, will say that there is an average of between three and four cavities per pupil. The worst conditions are to be found in the mouths of children between the ages of five and eight. I have found as high as seventeen six-year-old pupils with abscesses in a single room, and must say that there is a sad lack of knowledge on the part of the parents as to the importance of caring for the temporary teeth and keeping the child's mouth in a clean, healthy condition, or we would not find such appalling conditions.

Physiology and hygiene are not taught in the schools here, and this is a serious mistake of the Educational Department of the Province. These subjects should be taught when the child reaches certain grades.

Children are taught nature study and agriculture, and it seems to me far more important that a child should have some general knowledge of physiology and hygiene than that he should be taught details of the various bugs and worms or the difference between the breeds of cattle, etc., on the farm.

There should be some organized effort to have these subjects taught in the schools.

The dental and medical professions have kept the light of knowledge buried too long under the bushel.

Nothing is so valuable to the State as the lives of those who compose it. If we are to build up a strong nation, our children must be taught something about their bodies and how to keep them healthy.

Have written to other points in the Province to find out what is being done re oral hygiene, and will send you further information as soon as replies are received. I am

Yours respectfully,

A. W. LANE.

From Dr. A. L. La Rose, Province of Quebec.

Montreal, Dec. 31st, 1915.

Dear Doctor,—

I have much pleasure in answering your letter, dated Dec. 18th, as to the oral hygiene movement in this Province.

First, you probably know that Dr. E. Dubeau, Dean of the Dental

School, Laval University, has been nominated member of the Provincial Hygiene Board. This is a very important step, as it is an official recognition by the Government of the importance of oral hygiene.

Second, the City of Montreal has appointed a Dental School Inspector, in the person of Dr. G. Lemieux, M.P.P.

Dr. Lemieux, though his nomination is only a few months old, has already done much work. He started his official inspections on Sept. 1st, and to this date has visited 72 public schools; he examined 5,498 children, of whom 27,332 teeth were found decayed, 447 cases of irregularities, and 933 alveolar abscesses. 1,846 children were directed to our free dental clinics, where they received proper treatment.

Dr. Lemieux has also distributed to parents 5,498 circular letters, giving a brief summary of the first importance to be given to teeth and how to save them.

The school inspection consists: 1st—To note on a proper diagram, illustrated on each inspection sheet, the defective teeth and irregularities. 2nd—To give the children short advices on mouth hygiene. 3rd—To distribute dental literature. 4th—To organize lectures on mouth hygiene. 5th—To direct poor children to free dispensaries. 6th—To call the attention of the teaching staff to the importance of dental and mouth hygiene.

Third, public lectures, with wall charts and lantern slides, have been given by myself, Dr. A. W. Thornton, Dr. Ls. DeGuise and Dr. J. S. Dohan.

Fourth, the Laval Dental School, in order to facilitate the wide-spreading of public dental hygiene knowledge, has created a course of Oral Prophylaxis and Mouth Hygiene, to be given to dental students so as to enable them to not only be well informed on the subject, but also to be able to give intelligent lectures to their patients, to school children, to teachers and to the public.

The School Board has appointed your humble servant to perform this difficult task.

I was long in deciding, as I feel this ought to be one of the most important subjects of the dental curriculum.

I will try and do my best, and I hope all those interested in this subject will willingly give me their support and advice, so as to make of it an interesting series of lectures.

I include some of the literature used in our school inspections.

Wishing you a Happy New Year, I beg to remain,

Yours truly,

ALCIDE L. LAROSE, D.D.S.,
Sec'y for the Dental Hygiene Council.

From Dr. Geo. K. Thomson, Province of Nova Scotia.

My Dear Doctor:—

Except a few notes I sent to Dr. Seccombe, and which might be placed in your report, nothing has occurred. We have outlined a plan of work to use about \$800 of the \$1,000 voted for dentistry and eyes. Very busy at present with C.A.D.C. work.

Wishing you success and the compliments of the season.

Sincerely,

GEO. K. THOMSON.

From Dr. Thomson to Dr. Seccombe.

Dr. Ralph H. Woodbury has been appointed Government representative to the School Board of the City of Halifax.

In the School Board estimates appears \$1,000 for dentistry and eye treatment.

The Halifax Dental Society has recommended the appointment of a Dental Inspector for the schools of the City of Halifax.

Lieut. Karl F. Woodbury, C.A.D.C., has been detailed to No. 7 Stationary Hospital, the University of Dalhousie unit authorized by the War Office. Lieut. Woodbury is the youngest son of Dr. Frank Woodbury, Provincial Representative on D.D.C., and graduated from the Dental Department of the University of Dalhousie last spring.

The organization of the Home Service branch of the C.A.D.C. for the 6th Division is proceeding satisfactorily. Capt. Geo. K. Thomson is officer in charge.

Hon. Captain Jas. M. Magee and Otto Nase have received appointments as Captain and Lieutenant, respectively.

All of which is respectfully submitted.

HORACE E. EATON, Chairman.

GEORGE W. GRIEVE, Secretary.

Office of the Secretary,

2 Bloor Street East, Toronto,

Jan., 1916.

SECRETARY TREASURER'S REPORT (C.O.P.A.)

The annual meeting of the Canadian Oral Prophylactic Association was held January 20th, 1916, at the Walker House, Toronto. Owing to the fact that the programme arranged for our annual meeting—a lecture by Dr. Weston A. Price, on Blood Circulation, illustrated by Moving Pictures—would be of special interest to all the profession, it was decided to go on with the business part of the meeting, the reception of reports, etc., adjourn to Monday, February 14th, for the programme and to invite all the members of the Dental Profession of Toronto and vicinity to hear Dr. Price's lecture.

President's Report presented by Dr. A. J. McDonagh.

Educational Committee's Report presented by Dr. Geo. W. Grieve.

Financial Report presented by Dr. A. J. Broughton.

Receipts\$2,699.17

Expenditures—Charity and Educational\$ 646.29

Donations to:—

Canadian Dental Association for the Army Service Committee

\$106.28

Sick Children's Hospital 50.00

Army Dental Fund of the C.D.A. 100.00

Sunnyside Orphanage 3.48

Toronto University Hospital Corps\$36.06

McGill Hospital Corps 25.38

Army Service Corps 52.35

113.79

Lantern slides 13.80

Oral hygiene charts 70.00

Exhibit at O.D.A. convention 32.64

Printing 156.30

Expenditures of operating 1,225.02

Balance for 1916 2,453.97

Assets 3,943.47

Total gain over preceding year in revenue, \$385.55.

Total gain over preceding year in tooth brush sales, 113 gross.

Total gain over preceding year in paste and powder sales, 40 gross.

NORTHERN OHIO DENTAL ASSOCIATION.

The annual session of the Northern Ohio Dental Association will be held in Cleveland, June 1, 2, 3, 1916.

CLARENCE D. PECK, Secy.,
Sandusky.

NEW DEPARTURE IN PROGRESSIVE METHODS OF EDUCATION

MOVING PICTURES IN CALGARY SCHOOLS ILLUSTRATING DENTAL HYGIENE.

A new departure in progressive methods of education was introduced into Calgary schools yesterday when a moving picture performance to illustrate dental hygiene was staged at Crescent Heights Collegiate Institute. This was a "try-out" performance to test the equipment before Dr. Wright, the public school dentist, who organized the programme and selected the equipment. Mr. Aberhart, principal of the Collegiate Institute; Mr. T. B. Kidner, a member of the committee appointed by the school board to direct such work, and the members of the staff of the public and high schools.

The programme included two very interesting reels illustrating dental hygiene obtained by Dr. Wright from the Canadian Oral and Prophylactic Society, one industrial film illustrating the asphalt industry and the processes of street paving, and one comedy film loaned for the occasion. The dental films were unusually interesting. The first one took up the subject from a human interest standpoint and told the story of dental inspection in the experience of a family where father was a victim of violent toothache. It illustrated how father might have saved himself all the pains and aches by investment in a 25-cent tooth brush if he had gone about it in time, and portrayed the methods employed in up-to-date schools to inculcate proper habits of mouth cleanliness and tooth conservation among the younger generation.

A SCIENTIFIC FILM.

The other film was scientific after the fashion of a simple clinic. The position of "baby" and permanent teeth in a child's jaw was shown in a revolving skull with the outer bone cut away. The displacements of "baby's" teeth by permanent teeth was demonstrated in a rather wonderful picture which showed the slow growth of the teeth in the jaw, magnified several hundred times. Every detail of the process of growth was made plain, and the results of a too early loss of the first teeth, of a lack of cleanliness and decay were pictured. Different stages of tooth decay, pyorrhoea, deformed jaw, imperfect articulation, ulceration, etc., were pictured and explained.

When the pictures are shown to-day Dr. Wright will lecture to the pupils, emphasizing the importance of regular cleaning and illustrating by the pictures the proper method of thoroughly cleaning the teeth.

Other films are to be shown during the year under the direction of Dr. Wright. The series will include films on "Pure Milk," "The Fly

Nuisance," "Health and sanitation" and "Tuberculosis and How to Treat It."

VERY LITTLE EXPENSE.

The feature has involved a good deal of work and thought, but very little expense. The films were obtained free in most instances from bureaus in Canada and the United States organized for the promotion of health and sanitation. The portable machine and extra films are loaned by a local moving picture agency, and the fireproof box in which it is housed is a portable one which can be moved from school to school. Films for educational purposes are admitted free of duty. The expenses of the operator and the cost of cartage are almost all the cost involved. A plain white cotton curtain displayed the pictures satisfactorily. A member of the fire department supervised the erection of the machine and remained on hand for the performance.

Dr. Wright has been working on the organization of this for nearly four months and as a result several excellent educational programmes with lectures will be given in schools centrally located. W. M. Davidson, of the School Board, and Mr. T. B. Kidner have been appointed a committee to assist in the organization.

PRELIMINARY AND PROFESSIONAL EDUCATIONAL REQUIREMENTS OF THE PROVINCIAL DENTAL BOARD OF NOVA SCOTIA

QUALIFICATIONS FOR MATRICULATION OF STUDENTS.

Sect. XIV. Dental Act, 1911.

No person shall begin or enter upon the study of dentistry in any or all of its several branches, for the purpose of qualifying himself to practise the same in this Province, unless he has obtained from the board a certificate that he has satisfactorily passed a preliminary examination in such subjects as are from time to time prescribed by regulations made by the Board when approved by the Association and by the Governor-in-Council. 1891, c. 147, s. 11. 1895, c. 41, s. 1.

The Provincial Dental Board of Nova Scotia does not conduct matriculation or preliminary examinations, but the following certificates and diplomas are accepted for registration of dental students.

I. Graduates in Arts or Science of a recognized college or university, provided the candidate shows that he has passed a satisfactory examination in Latin, and in Greek or French or German.

II. The Dental Board will also recognize *pro tanto* the following examinations:

- (1) The matriculation or sessional examinations of any chartered university or college approved by the board.
- (2) The final or graduating examinations of the collegiate schools or academies directly connected with Acadia University, Wolfville, N.S.; King's University, Windsor, N.S.; Mount Allison University, Sackville, N.B.
- (3) The entrance examination of the Nova Scotia Barristers' Society.
- (4) The examinations for teachers' licenses, grade A or B, Nova Scotia.
- (5) The examinations for junior high school leaving certificates for Nova Scotia.
- (6) The examinations for honor, first or second class ordinary diplomas, as issued by the Prince of Wales College, P.E.I.
- (7) The examinations for first or second class teachers' license of Prince Edward Island.
- (7) The examinations for first or second class teachers' license of New Brunswick.
- (9) The examinations for corresponding licenses or leaving examination certificates issued by the Education Departments of the other Provinces of Canada and of Newfoundland.
- (10) The matriculation or preliminary examination of any medical licensing board or council authorized by law in His Majesty's Dominions.

Note.—In accepting certificates under the above sub-sections 2-9 inclusive, the following standard shall be observed: The certificates of grade XI. standard, issued by the Education Department of Nova Scotia in 1910 and subsequent years, are accepted for the matriculation subjects which they cover, provided the average mark obtained in these subjects is at least 60 per cent. and the *minimum* mark not less than 40 per cent., or a minimum mark of 50 per cent. in each subject. The minimum mark for English is 50 per cent. in every case.

When any one of the subjects specified as required for matriculation is divided into two or more parts, the average mark for such parts is taken as the mark obtained for the subject. Certificates accepted under sub-section 10 must reach a minimum mark of 50 in each subject. Marks obtained in subjects other than those required for matriculation are not considered.

These regulations fully meet the standard set by the Dominion Dental Council.

Certificates of the Dental Board issued in 1912, and after are accepted for matriculation into the Faculty of Dentistry of Dalhousie University.

Official blanks for matriculation and registration purposes will be furnished. For all information apply to

GEO. K. THOMSON, D.D.S.,
Secretary-Registrar,
Chronicle Building, Halifax, N.S.

MINIMUM REQUIREMENTS FOR PRELIMINARY REGISTRATION.

A candidate for registration, as a student, must produce satisfactory evidence that he has attained his sixteenth year, that he is a person of good character, and pay a fee of ten dollars (\$10.00) to the secretary-registrar.

II. The preliminary requirements embrace the following subjects, viz:

- (1) English.
 - (a) *Language*, Grammar, Analysis, Parsing.
 - (b) *Rhetoric and Composition*, including an essay on one of several set subjects from prescribed authors. Questions on the interpretation of a passage from an author not prescribed, to test general intelligence.
 - (c) *Literature*. History of English Literature; critical study of prescribed authors.
- (2)
 - (a) Arithmetic. Complete.
 - (b) Algebra. Simple Rules; Rules for the treatment of Indices; Surds; Extraction of Square and Cube Roots; Equations of the First Degree; Quadratic Equations.
- (3) Geometry. Euclid, Books I., II., III., with easy deductions.
- (4) History and Geography. British and Canadian History, with questions in General Geography.
- (5) Latin.
 - (a) Translation from prescribed books, with questions arising out of those books, and translation of easy passages not taken from those books.
 - (b) *Grammar*, including Accidence and Elementary Syntax.
 - (c) *Composition* in translation of easy sentences, or of one simple continuous passage from English into Latin.
- (6) One of the following:
 - Greek.
 - (a) Translation from prescribed books, with questions arising out of those books, and translation of easy passages not taken from those books.
 - (b) *Grammar*, including Accidence and Elementary Syntax.
 - (c) *Composition* in translation of easy sentences, or of one simple continuous passage from English into Greek.

French. *Translation* from prescribed books, with *Grammar* questions limited to the *Accidence* and easy rules of *Syntax*; easy sight translation from French into English, and from English into French.

German. *Translation, Grammar, etc.*, as under French.

Physics and Chemistry. Equivalent to Grade XI. High School course of N. S.

TERMS OF STUDENTSHIP.

1. The term of studentship for the practice of dentistry in Nova Scotia shall be four regular winter sessions, in a recognized dental college, the curriculum of which requires four academic years of studentship before graduation, which shall aggregate a minimum of thirty months' actual attendance before receiving a diploma.

2. For a person who is a graduate of a dental college recognized by the Provincial Dental Board which requires less time than four years, or thirty months' attendance, the term of studentship shall be thirty-six months. The extra time over and above the months in college shall be spent in *bona fide* studentship under a registered dental practitioner in Canada, in which case the student shall file a certified copy of his contract with his preceptor in the office of the Secretary-Registrar of the Provincial Dental Board of Nova Scotia, at the beginning of said preceptorship, *or he may complete his studentship in a recognized Canadian Dental College*. Upon receiving his diploma he will be eligible for examination under the regulations of the Dental Board.

REQUIREMENTS FOR LICENSE TO PRACTICE DENTISTRY IN NOVA SCOTIA

A candidate for license to practice dentistry must qualify as follows:

1. He must be the full age of twenty-one years.
2. He must be a graduate of a dental college recognized by the Board.
3. He must forward to the Secretary-Registrar fourteen days before the examination:

(a) A written application for examination, accompanied by a satisfactory certificate of character.

(b) The license fee of fifty dollars (\$50.00) must be paid before the examination takes place.

(c) The matriculation certificate, diploma, class tickets and other vouchers considered necessary.

(d) When required, a written statement from himself and attested certificate from preceptor or preceptors as to length of time in months he was studying under his or their direction. Blanks will be supplied by the Secretary-Registrar for this purpose.

EXAMINATIONS.

1. He shall pass an examination before the Board of Examiners on the subjects usually included in a dental education*, and shall perform operations in the mouth, and give practical evidence of skill in prosthetic dentistry which shall be satisfactory to the board.

2. Professional examinations shall be held twice during the year in the city of Halifax, beginning on the second Wednesday in September and the first Wednesday previous to the first Monday in May.†

Supplementary examinations shall be held at the same time and place.

3. In all professional examinations the pass mark shall be fifty per cent. in each subject.

4. No candidate shall be admissible to examination who has been rejected in the subjects of the examination by any other licensing board within the three preceding months.

5. Applicants for admission to the examinations are required to lodge with the Secretary-Registrar a schedule (forms of which will be supplied) showing the courses they have attended, qualifying for admission.*

6. All candidates for registration in Nova Scotia must take the professional examinations prescribed by the Provincial Dental Board.

7. By an arrangement between the University of Dalhousie and the Provincial Dental Board of Nova Scotia the professional examinations are conducted conjointly by the examiners of the faculty of dentistry of the university and seven dentists nominated by the board. Students of the university may qualify at the same time for the degree of D.D.S. and for the license to practice in Nova Scotia.

PRACTITIONERS.

1. The Dental Board shall accept persons holding the certificate of qualification of the Dominion Dental Council of Canada,‡ for registration without examination, providing that all other qualifications required by the board are met. (Chapter 42, Acts 1907.)

2. Any candidate for registration as a practising dentist in Nova Scotia who produces to the Secretary-Registrar satisfactory certificates of having passed in some dental college or university recognized by the Dominion Dental Council of Canada in the following subjects may be exempted

*Physics and Chemistry, Anatomy, Pathology and Bacteriology, Prosthetic Dentistry and Metallurgy, Operative Dentistry, Physiology and Histology, Porcelain and Crown and Bridge Work and Oral Hygiene, Materia Medica and Therapeutics, Orthodontia, Medicine, Surgery and Anesthetics.

†When May begins on Monday the examination begins on the Wednesday following.

DOMINION DENTAL COUNCIL.

‡The Dominion Dental Council of Canada is a central organization under the control of the dental profession of Canada. Its object is to erect and maintain a standard of education and ethics for the dental profession, and to conduct professional examinations and issue Certificates of Qualification which shall be accepted without further examination by the provinces. For information concerning the requirements of the Dominion Dental Council, apply to Dr. W. D. Cowan, Secretary of the Dominion Dental Council, Regina, Sask., or to the Dental Registrar of any Province.

from further examination upon such subjects—Anatomy, Chemistry, Physics, Histology, Physiology.

3. Any candidate who presents a certificate from a registering or licensing body that he has been in continuous ethical practice for five years previous to July 1st, 1912, and fulfils all other requirements of the board, shall pass examinations in the following subjects:

Pathology and Bacteriology, Prosthetic Dentistry and Metallurgy, Operative Dentistry, Porcelain and Crown and Bridge Work, Materia Medica and Therapeutics, Orthodontia, Medicine, Surgery and Anaesthetics.

All previous regulations relating to matriculation and registration are hereby rescinded.

REGULATIONS RESPECTING FEES AND DUES.

Annual dues are payable in advance on July 31st of each year, as per Section 19, Dental Act, is revised as follows:

"Every person when registering shall pay to the Registrar a registration fee of \$20.00, unless he has already paid the examination fee, and shall also pay, in advance, the proportional part of the annual dues for the part of the year from the date of registering up to the 31st of July, ensuing, and every person whose name is registered shall, on or before the 31st of July in each and every year, pay in advance the annual dues; and the name of every registered practitioner whose annual dues remain unpaid for two years from the time the same are payable shall be erased from the register, provided that such name shall be restored on payment of all arrears unless the same is liable to be erased from some other cause."

The amount of annual dues not to exceed \$5.00 is fixed by the Dental Association annually.

FEES.

Matriculation or Preliminary Registration	\$10 00
Preliminary Examination Supplementary, each subject	2 00
Professional Examination and Registration	50 00
Re-Examination in all subjects	30 00
Supplementary, each subject	5 00
Registration, Graduates of Faculty of Dentistry of Dalhousie University	20 00
Registration Holders of Certificates of Qualifications from Dominion Dental Council	20 00

All forms of application and necessary blank certificates will be supplied.

Apply for all information to

DR. G. K. THOMSON,
*Secretary-Registrar of Provincial
 Dental Board of Nova Scotia,
 Chronicle Building, Halifax, N.S.*

ONTARIO DENTAL CONVENTION

Toronto, May 8th, 9th and 10th, 1916.

Dr. Elmer S. Best, Minneapolis, Minn., will give a paper on "Treatment and Filling of Root Canals." Other important features will be: "Treatment of Pyorrhœa by General Practitioner," "How to Make a Diagnosis," "Use of Elevators in Exodontia," "Surgical Treatment of Apical Infection," "Cementation of Inlays, Crowns and Bridges," "Impression Taking." Good clinics. Usual reduced railroad rates. Mark these dates now. Fuller announcement later.

W. T. B. AMY, Chairman.

DENTAL MANUFACTURERS' CLUB

According to the plans laid out for the exhibit to be held at the Auditorium Hotel, Chicago, Ill., first week in April, the Dental Manufacturers' Club Exhibit promises to be a record breaker.

The plans providing for table clinics, demonstrations and lectures by or under the direction of "The men who make the goods," will be highly educational.

During the week, the Hotel Auditorium will be the rendezvous of members of the profession from all parts of the United States and Canada.

An invitation is cordially extended to members of the profession and their friends.

THE CANADIAN ORAL PROPHYLACTIC ASSOCIATION

The annual meeting of the highly useful and philanthropic organization was divided into a business meeting and an educational meeting. The business was held at the Walker House and the educational meeting was held at the Garden Theatre. Dr. Weston A. Price, of Cleveland, gave an address to an audience of over five hundred dentists and physicians. It was, without exception, the most instructive and highly informing and entertaining address and exhibition on a dental subject ever presented in Toronto. By lantern slides and moving pictures he showed the progress of systemic injections from local foci. He also showed moving pictures of the blood stream during infection and the development of both bacteria and animal life. Fertilization and development of sea fishes and animals were shown in moving pictures.

The president of the Ontario Medical Association was so struck with the merits of the address that he at once made arrangements with Dr. Price to give his lecture to the members of the medical profession.

Dominion Dental Journal

EDITOR:

A. F. WEBSTER, M.D., D.D.S., L.D.S., - - - - - TORONTO, CAN.
3 College Street

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St. John.

NOVA SCOTIA

FRANK WOODBURY, L.D.S., D.D.S.
Halifax.

SASKATCHEWAN

W. D. COWAN, L.D.S.
Regina.

PRINCE EDWARD ISLAND

J. S. BAGNALL, D.D.S., L.D.S.
Charlottetown.

MANITOBA

M. H. GARVIN, D.D.S., L.D.S.
Winnipeg.

BRITISH COLUMBIA

H. T. MINOGUE, D.D.S., L.D.S.
Vancouver.

All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, MARCH 15, 1916.

No. 3.

SPECIAL SESSION OF ROYAL COLLEGE OF DENTAL SURGEONS

To satisfy a demand for dentists both at home and overseas the Royal College of Dental Surgeons has decided to conduct a special summer course. In other words, the College courses will be continuous for the second and third year classes until they graduate. Immediately following the spring examinations the special course will begin and continue until the full time has been fulfilled. There will be no special course for the freshmen. They will enter college next fall as sophomores. There will be no regular junior course next winter.

These courses are being given at a great sacrifice by the staff and the college, and are not intended as a means of graduating young men before the regular time, so as to begin practice on their own account. This is a real war measure by which young men may prepare themselves to enter the Army Dental Service as sergeants, being graduates they will be eligible for promotion to the rank of lieutenant.

Young men who graduate under this special course may be given a license to practice in Ontario before the full expiration of the time at which

they would have regularly graduated if it can be shown they take the place of a dentist who has gone to the front.

The University of Toronto has made all the necessary arrangements to hold their examinations and grant degrees in accordance with the regulations brought into force by the Royal College of Dental Surgeons.

A CONDITION, NOT A THEORY WITH A REMEDY

Any one who has had many years of experience in dental practice and dental teaching cannot help marvelling at the complacency with which young men leave college to begin practice. Many of them hopelessly incapable of treating many of the cases they will meet, not to mention making a diagnosis. Some are wholly unable to do a creditable piece of mechanical work, but they don't know it until they try for themselves. The inexperienced teacher or the unthinking would say that such men should not be allowed to graduate, but the trouble is some young men do not awaken to their responsibilities until they try to practise alone. Three or five years more college would do little for them until they have awakened. The tragedy of it all is that young men will stand by a clinician who is doing a piece of work for them and pay no more attention than if it were being done fifty miles away.

What is the result of this lack of appreciation of what is being given so freely at college. Young men awaken when there is little means of help. They fall a prey to the best advertisers. The young dental traveller and the dental laboratory man are his preceptors. Whether we like to admit it or not, the fact remains that the dental mechanic and the dental supply houses conduct the only true, post graduate courses in dentistry in Canada. It is hardly becoming of a professional man who calls himself a doctor to be compelled to sit at the feet of a young dental traveller to be instructed in how and when to use emetine, Buckley's paste or Rhein's broaches. Or be compelled to accept the design of a case of bridge work from a man who has not seen the patient and does not pretend to know anything of physiology, anatomy, or pathology. The dental traveller goes from office to office giving what help he can. He picks up many stunts as he goes about and passes them on. He carries the instruction to the very door of the dentist. The dental laboratory mechanic conducts a dental correspondence school. He not only designs but makes the needed appliance. Many bridges are designed and made when there is no more instruction given by the dentist than can be obtained from a compound impression and a mush bite.

What is the remedy? Post graduate courses in dentistry carried out along the lines indicated above. In Ontario an annual practitioners' course,

a correspondence school of dentistry, with headquarters at the college, dental courses given in all dental centres, where five or six dentists can be got together, and a bureau of research and information put under way.

APPOINTMENTS TO THE ARMY DENTAL CORPS

In our November issue we set forth how to join the Army Dental Corps. At that time we were told that our methods were all wrong because we left out the most important factor—"political pull."

On more than one occasion since we have been able to show that "political pull" is not necessary provided the applicant is the most competent. Since our former statement of how to join the Army Dental Corps conditions have changed somewhat.

The commanding dental officer in each division makes the recommendation to Major Clayton, at Ottawa, who makes the appointment under the Militia Department. There are many essentials for a dental officer. He should be of good physique, not too old, long experience in dentistry, have military training and capable of getting along with men. One of the important things about the dental corps up to the present is the lack of sufficient applications from dentists of high professional standing and long experience. Recent graduates should be satisfied to take subordinate positions.

CANADIAN DENTAL ASSOCIATION MEETING.

The Canadian Dental Association will meet on September 12th, 13th, 14th and 15th, 1916, at Montreal.

Editorial Notes

Students of the R. C. D. S. are leaving every day for overseas service.



Dr. Wallace Seccombe addressed the London School Board on oral hygiene.



Captains Gow and Mallory are the only dental surgeons with the British forces at Salonica.



After five years' work among the school children's teeth in Toronto, the reduction is from 95 to 65 per cent.



Dr. J. H. Wiltz, of Walkerville, has enlisted with the C. A. D. C., and has rank of Lieutenant.



Dr. Hollingshead, Toronto, has enlisted for overseas service with the Canadian Army Dental Corps.



Messrs. Goodhand and Taylor, R. C. D. S. 1916, have joined the Army Dental Corps at Calgary.



Dr. J. M. Deens, of Galt, has been appointed to the Canadian Army Dental Corps, with the rank of Lieutenant.



The Dental Laboratory Mechanics of Toronto, are organizing themselves for business and mutual improvement purposes.



Dr. J. W. Meadows, of London, England, has been appointed dental surgeon of the Ontario Hospital, Orpington, England.



Mr. Williamson and Mr. McKee, R. C. D. S., 1916 and 1917, respectively, have joined the Army Dental Corps at Quebec.



Dr. Frank L. Dayment has assumed the practice of Dr. Geo. Gow, 1 Bloor Street East, Toronto, during Dr. Gow's absence overseas.



Dr. J. A. Ross, of Cochrane, has been appointed to the Canadian Army Dental Corps, and is at the Exhibition Camp, Toronto.

✓ Dr. C. C. McLachlan, Sault Ste. Marie, has been appointed to the C.A.D.C., and is stationed at present at the Exhibition Camp, Toronto.



The Annual At Home and Dance of the Royal College of Dental Surgeons was held in the Metropolitan Assembly Rooms, February 19th, 1916.



✓ Dr. Harold Campbell, one of the demonstrators of the Royal College of Dental Surgeons, has been appointed to the Canadian Army Dental Corps, with rank of Lieutenant, and is stationed at Welland for the present.



✓ Dr. S. R. Martin, of Banff, has taken over the practice of Dr. Schnarr, Kenora, who has enlisted for overseas, being now second in command of the 94th Battalion.



A patient treated in the Royal College of Dental Surgeons claims to have been poisoned with gas and is entering action against the college for damages.



After some discussion of the Public School Management Committee it was decided that Separate School children could not be given dental treatment in the Public School dental clinics in Toronto.



Dr. J. H. Carrique, of Toronto, who says he was swindled out of \$5,000 by a New York firm, has applied to the King for redress which it appears the authorities in Canada cannot grant him.



Graduates of the Dental College in Canada who would have taken the regular Dominion Dental Council Examinations in June but for the fact that they have joined the army and gone overseas, might well be shown some consideration by the council.



The Chicago *Tribune*, in an editorial, points out that the work of the dentist is chiefly for the relief of pain and the production of relief and happiness, and unfortunately though the dentists are among the greatest benefactors they are the butt of jokes.



Dr. A. W. Thornton, Dean of the Dental Department, McGill University, Montreal, Que., addressed the Institute of Dental Teachers, Minneapolis, Minn., on the subject of the War, illustrated by many lantern slides taken by himself while he was in Europe last summer.

Recruiting has come to such a pass in the large cities that young men who are not in uniform are made to feel very uncomfortable. It has been suggested that those dental students who are now in attendance at dental colleges with the intention of going overseas be at once attested, to take effect at the close of the examinations.



Dr. J. G. A. Gendreau, Montreal, has been created brevet officer of the Academy by the Minister of Public Instruction, France, notification being transmitted through the Canadian Consul-General for France. Dr. Gendreau is one of the founders of the School of Dental Surgery of Laval University, of which he is still a professor and secretary-treasurer.



Employees of the S. S. White Dental Manufacturing Co., Toronto, who have enlisted for overseas service: Sergeant Louis Keats, 8th Canadian Mounted Rifles; Corporal James Robertson, 2nd Division Cyclist Guides; Private Reginald Derrick, 2nd Division Cyclist Guides; Sergeant Kenneth M. Harris, C.A.D.C.; Private Laurence E. Thompson, 201st Battalion, Toronto Light Infantry.



The "Dental Cosmos" says in a recent editorial: "In view of its importance, both to the dental profession and to the public, it would seem wise to divert some of the energy now being expended on pyorrhœa, focal inflammations, mouth hygiene and the like to a consideration of the basic question of uniform dental laws and interstate reciprocity in dental licenses."



The American Society of Orthodontists will hold their annual meeting in Pittsburgh, July 20, 21, 22, 1916. The usual high standard of the meetings of this society will be maintained. All those interested in Orthodontia are welcome. Any communications regarding the meeting may be addressed to Dr. F. M. Casto, 520 Rose Bldg., Cleveland, Ohio.



It would seem from reports of the officers of the Canadian Army Dental Corps that the dental corps does not have access to the supplies and equipment of the Red Cross. If this cannot be rectified it might be well for the dentists to consider whether they should continue to subscribe to Red Cross funds when much more could be done by supplying the needs of the Dental Corps.



Major W. B. Clayton, chief dental officer for Canada, is making a tour of the different Provinces in connection with the Army Dental Corps. Major Clayton visited the dental clinic at the Guy street barracks, Montreal, Que., and made a thorough inspection of the work being done there, expressing pleasure at the completeness of the arrangements for treatment of the men's teeth. Since November last 3,963 dental operations had been performed, and 1,286 men had been treated.

Dr. A. Primrose, in a letter from the No. 4 Base Hospital, Saloniki, says Dr. Geo. Gow and Dr. Mallory are doing a tremendous amount of dental work in their special tent. They have had to do a lot of work for men outside our unit, as there are no other skilled dentists hereabouts. They work all day and every day, and are both unexcelled in their professional work, and we are very lucky to have them. So many Tommies lose their teeth at the front. This is due to the life they lead and the eating of "hard tack." Some poor chaps come in in a miserable condition, having lost their teeth and being unable to masticate their food properly, they are miserable indeed. There is no choice of diet at the front. They must eat what is given out to them and what is available, so it comes about that our dentists are doing noble work.

DENTISTS IN COMMAND OF BATTALIONS.

✓ Col. J. E. Stewart, Lethbridge, Alta.
 Col. Neil Smith, Stratford, Ont.
 Col. E. F. Armstrong, Haileybury, Ont.
 Major H. A. Croll, Souris, Man.

MAJOR H. A. CROLL PROMOTED.

✓ Major H. A. Croll, officer commanding "A" Squadron, 10th C.M.R.'s, Portage la Prairie, has been promoted second-in-command of the regiment, succeeding Major T. W. Wright, who is going overseas in command of the 3rd Divisional Cavalry Squadron.

Major Croll is a well-known Western officer. Prior to the outbreak of war he lived at Souris, Man., in which town he practised as a dental surgeon. When hostilities commenced in August, 1914, Major Croll was appointed recruiting officer at Souris and continued to act in this capacity until the organization of the 10th C.M.R.'s, in December, 1915, when he was appointed to command a squadron of the new regiment.

Before coming west Major Croll had served as a private in an eastern regiment. In 1904 he joined the 12th Manitoba Dragoons as quartermaster sergeant. The same year he received a commission with the rank of lieutenant. In 1909 he was promoted captain and in 1910 to the rank of major. For the past six years he has been adjutant of the regiment.

For two years he has been president of the Manitoba Dental Association and has been a member of the board of directors for nine years, also having held the office of registrar. His many friends throughout the west will be glad to hear of his well merited promotion.

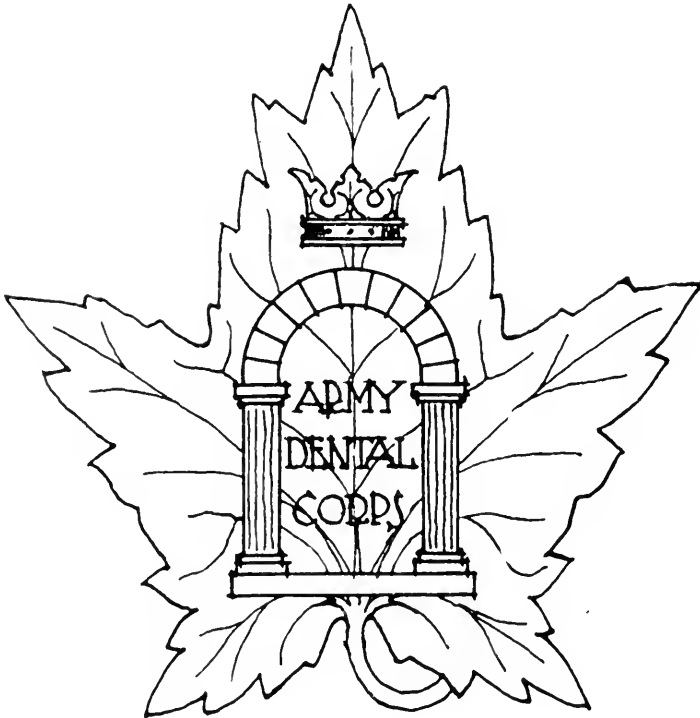
Correspondence

THE C. A. D. C. BADGE

MONTREAL, January 14th, 1916.

EDITOR DOMINION DENTAL JOURNAL:

I was very much surprised, as well as very much delighted, yesterday by a visit from Major W. B. Clayton, at present Acting Commanding Officer of the Canadian Army Dental Corps, Ottawa. Possibly "Acting Commanding Officer" may not be his present official title, but whatever he is, he paid me a visit. I had the pleasure of meeting and spending some time with Major Clayton during the past summer at St. Martin's Plain, Folkestone, where he was associated with Captains Morison, Hutchison and McLaughlan. These men were the soul of kindness and hospitality during my short visit with them, and it was a real pleasure to return the compliment to Major Clayton.



While at luncheon with Major Clayton I happened to notice the badge on the collar of his tunic, the original drawing for which I have pleasure in submitting to you for publication, together with a short account of its inception.

Some time after the Army Dental Corps was formed Colonel Armstrong wrote me, asking me to suggest a design for a badge for the new dental unit. I spoke to several persons who I thought had artistic taste, asking them for suggestions, but all seemed to think it necessary to suggest something peculiarly dental, *e.g.*, "a tooth," "a pair of forceps," "a full

upper denture"; all, of course, in miniature, and more or less embellished. But that was the kind of thing I wished to keep away from, and after thinking of it for some time I made a sketch of the enclosed drawing, and had Professor Ludlow, of the Department of Architecture, put it in shape for me. In the original sketch I had a Royal Crown above the arch, but the professor thought that the Royal Crown could not be used on a Canadian badge, and substituted the coronet seen in the drawing. I see, however, the Royal or Imperial Crown of the original sketch has been used. The significance of the sketch is easily seen.

The Maple Leaf is, of course, the emblem of Canada. The Crown suggests the Imperial connection. The arch, or open portal, suggests the mouth or open portal to the alimentary canal, from which the whole being is nourished, and upon which the physical well-being of the individual depends. Standing in this open portal, to guard it and to maintain its highest efficiency, is the Canadian Army Dental Corps. The whole is suggestive of the unity of the Empire, and the maintenance of the physical well-being of the Imperial forces.

I had the original design photographed by the Stroud Photo Co., of this city, and on the day I received the prints, showed the design to the members of the Montreal Dental Club.

I have still the original photographic plate. The day following the receipt of the prints I sent one to Colonel Armstrong, with a description similar to the preceding of the significance of the emblem. Colonel Armstrong being very busy at that time did not find time to reply and acknowledge the receipt of the design.

Being in Ottawa some time afterwards I spoke to Colonel Armstrong about it, but he told me that the man in charge of making the badges had told him that the design was unsuitable, and would be difficult to make.

I heard no more of it until I saw it on Major Clayton's uniform. Evidently the design proved easier to manufacture than was at first anticipated, and in the press of duties in connection with the formation of the unit Colonel Armstrong has forgotten to say anything about it. I thought that possibly the profession in Canada might be interested in the origin of the badge of the first strictly Army Dental Corps in the world.

Very truly yours,

A. W. THORNTON

P.S.—When Professor Ludlow gave me the original drawing he told me that if the design was accepted he would make a more perfect and artistic drawing, the first sketch being simply suggestive. When it was decided to adopt the design it seems a pity that the more perfect copy was not procured.

A. W. T.

**QUEBEC COLLEGE OF DENTAL SURGEONS
SUBSCRIBE TO ARMY DENTAL
FUND**

Montreal, February 21st, 1916.

Major Clayton,

Commander Canadian Army Dental Corps,

Ottawa:

Dear Sir,—

I take great pleasure in sending you the enclosed cheque for two hundred and fifty dollars (\$250.00), subscription of the College of Dental Surgeons of the Province of Quebec towards the welfare of our boys at the front. It is desired that you should use your own judgment in the disposal of this money, as our Board of Governors hold the unanimous opinion that you are the right man at the right place, and are willing to back, to the ultimate limit, your valorous efforts to make the Dental Army Corps worthy of the cause they are fighting for, and the Army they are working with.

Yours truly,

(Signed) JOSEPH NOLIN, D.D.S.,

President.

DENTISTS IN THE AUSTRALIAN ARMY

It would appear from what one could gather from the "Commonwealth Dental Review," that, as a result of an inquiry made into the condition in Egypt and at the front, the Acting Director General of the Medical Service, Col. Featherstone, has recommended that additional dentists and dental mechanics be appointed for service with the troops, and that Major T. F. W. Hall, principal dental officer in Australia, be appointed on the staff to Director General Medical Service, at headquarters, and at the rank of Major. It would appear from this statement that the Army Dental Surgeon in Australia is a part of and under the control of the Medical Service Army and that the highest officer is a Major. This makes it entirely impossible for the dentist to ever become head of the Service. In Canada the position is different. Dentistry has an independent service, with its own director general and the highest officer being Colonel. At the present time there are over two hundred in the Army Dental Service at the front. It would appear from letters coming from many parts of the European conflict where Australian troops are engaged that the number of dentists appointed are not nearly enough to take care of the officers and men.

Obituary

MAJOR CHARLES EDWARD SALE

Major Charles Edward Sale, 18th Battalion, Canadian Expeditionary Force, whose death of wounds occurred on the 17th of January, at the battlefield, had practised dentistry in Goderich for about twelve years before enlisting in the Second Canadian Contingent for overseas service. He had held the rank of Captain in the 33rd (Huron) Militia Regiment. Major Sale was born thirty-eight years ago in the Township of London,



Major Charles E. Sale, Goderich, Ont.

and attended the London Collegiate Institute before taking his dental course at Toronto. He had established a successful practice and outside of his profession was connected with many of the activities of the town. He was twice president of the Menesetung Canoe Club, was a member of Huron Lodge, I.O.O.F., a Past Master of Maitland Lodge, A. F. & A. M.,

and was a member of several other Masonic societies. He was a member of St. George's (Anglican) church. He leaves a wife and two children, a boy of seven and a girl of four years.

Major Sale graduated from the Royal College of Dental Surgeons and the University of Toronto in 1904 and, five years later, passed the examination for the title of Master of Dental Surgery. For several years he was a member of the examining board of the Royal College, and was elected a member of the Board of Directors 1914. Major Sale is the first graduate of the Royal College of Dental Surgeons to lay down his life in defence of his country. Dr. Sale was well known in his profession as a man of outstanding ability and possessed of a high sense of his duty as a citizen.

Major Sale was the first military officer in Goderich to enlist for active service, and his example, made at great personal sacrifice, had a profound effect upon recruiting at this center. The whole town mourns the loss of a gallant officer and a good citizen. A memorial service, held in St. George's church, on the 22nd inst., was attended by citizens of all classes and denominations, and Rev. J. B. Fotheringham delivered an impressive eulogy of the departed soldier.

W. C. GOWAN, D. D. S., L. D. S.

Dr. W. C. Gowan, Peterboro, died September, 1915. Dr. Gowan was born in the County of Simcoe, near the Village of Creemore, 1862. His early education was obtained at the public schools of Creemore and Collingwood Collegiate Institute. After teaching school some years at Cannington, Ont., he learned the photographic business with Mr. Castor, of Collingwood, and then worked at this business in several cities in both Canada and the United States. During periods while obtaining his public and high school education, he learned carpentry and joining.

In 1890 he was engaged in photography in Chicago and finding that business dull at times he began the study of dentistry in the Chicago College of Dental Surgery. During his second and third years at this institution he was an instructor in chemistry.

After graduation he practiced in Southern Illinois until the very hot weather came on which so lowered his health that it was necessary for him to come home to Canada. He entered the Royal College of Dental Surgeons of Ontario in the fall of 1894 and graduated 1895. For over ten years he practiced in his native village of Creemore, where he won the confidence of a large rural community.

During his years in Creemore he regained his health by much outdoor occupation. His home and garden engaged many a pleasant hour. He was an expert fisherman, especially with the fly. From boyhood he was

an expert shot with the revolver, rifle or shot gun. Hunting and target shooting were followed with zest. In fact he did nothing half heartedly. Though outdoor life got attention it was not all absorbing by any means. Many exact methods of practice were developed during this period of his life. He presented to the profession at this time the technique of filling small proximal cavities in anterior teeth with gutta percha, and large ones, where the labial plate remained, with gutta percha, facing them with amalgam. This latter practice has been little followed because of the difficulty of the technique, notwithstanding there are many of these fillings



The late Dr. W. C. Gowan, Peterboro, Ont.

doing good service after fifteen years, without the slightest discoloration of the tooth from the amalgam. He developed a technique of making fine piano wire smooth broaches for removing pulps from fine canals of molars, that were truly marvelous. With a few wisps of cotton wound on one of these fine smooth broaches he removed the pulps from fine canals with ease.

Exactness to the minutest detail was one of Dr. Gowan's characteristics. This was shown not only in his technique, but also in his conversation and writings. He presented a paper before the Ontario Dental Society on the advantage of correct expressions and use of words in dentistry which stands to-day as an example of exactness. He travelled from coast to coast to attend dental meetings, giving clinics, talks and papers on methods of practice.

In 1905 he moved to the City of Peterboro and set about developing a practise under new conditions. This was necessarily slow because he spent more time in study and thought than getting acquainted with people. His skill gradually became known until all of his time was occupied.

With the development of gold inlays as fillings came the necessity for modifying cavity formation. Dr. Gowan developed a method of thin marginal walls that has been followed very largely throughout the world. This method of practice was demonstrated before all the important societies on this continent and forms a chapter of a work recently published in England, by Norman Bennet. Dr. Gowan is the author of the chapter on filling teeth with gold in this same important work.

Dr. Gowan was an idealist, with unbending standards of uprightness, impatient of sham and chicanery. His practise was conducted along lines few dentists follow, but many talk about.

Dr. Gowan leaves a wife and two sons to mourn the loss of a devoted husband and a kind father.

JOHN STANLEY REED

The death occurred on Tuesday, February 1st, after a brief illness, of Dr. John Stanley Reed, the well-known dentist of Walkerton. The deceased was born at Oakville, 39 years ago, but had spent the greater part of his life in Toronto. Pleuro-pneumonia with complications, was responsible for his death. The late Dr. Reed was an active worker in the Methodist church, and was also a great lover of outdoor sports. A wife and small daughter are left to mourn.

A CORRECTION.

Please note the following error which occurs on page 37, 2nd para. January number of Dominion Dental Journal. "Dr. F. Woodbury" should read "Dr. Karl F. Woodbury." Dr. F. Woodbury is Captain and Adjutant of No. 7 Stationary Hospital.

WANTED—A partner to an established dental practice of over twenty-five years' standing, in Montreal. Must have license for the Province of Quebec. None but those of high reference considered. Address
DOMINION DENTAL JOURNAL.

Dominion Dental Journal

VOL. XXVIII.

TORONTO, APRIL 15, 1916.

No. 4.

Original Communications

PATHOLOGY OF DENTAL INFECTIONS AND ITS RELATION TO GENERAL DISEASES

WESTON A. PRICE, D.D.S., Cleveland, Ohio.

Delivered before the Annual Meeting of the Canadian Oral Prophylactic
Association, Toronto, February 14, 1916.

Mr. President,—I want to assure you that I come with a very deep sense of my inability to-night to live up to the standard and desire and hope that has been thrown out by Dr. McDonagh. I think it is a very unfair handicap to put upon a man to make such extravagant statements which of all men I certainly cannot live up to.

It is, however, a very great pleasure to be here, and I come with a mingled feeling of joy that I am privileged to come back to Toronto and be with you again, and feelings of helplessness akin almost to discouragement when I realize the responsibility that is being thrust upon the dental profession to-day, and the utter inadequacy of the dental profession to meet that responsibility. One week ago this evening we had in Cleveland the opening of the Research Institute of the National Dental Association, and had as one of our speakers Dr. Charles Mayo, of Rochester, Minnesota. That splendid orator and magnificent physician and surgeon reviewed to us in detail the development of modern science as it relates to the healing arts. He reminded us of the splendid contributions of the Chinese, of those great contributions of the Greeks, and finally came down to the present decades and reminded us how one after another the great scourges, the great besoms of death, had been taken from the earth by medical science, and then as his climax, said the great mass of people to-day would not die of one of those plagues, they would die of a simple infection, that 90 out of every 100 probably would die because of some simple infection, the result of a focal infection, which focus itself would give them no trouble. He then referred to the fact that 90 per cent. of the lesions, of the focal infections, are above the collar, and of those above the collar which would include the tonsils, the antrum, the nasal passages and sinuses, that for the largest part come from dental infections, oral infections, and then accepted the challenge of the dental profession that they

are going to take that responsibility. Are you going to do it, brothers? Recently I have been corresponding with the deans of the universities and the dental colleges of the country, with the editors of our best journals, and advertising in our dental journals to find if we cannot get one dozen, or even one-half dozen, men who are competent to go into the department of research to determine the relation of mouth infections to systemic infections. How many do you suppose we could find? I am ashamed to let you know. There are a few good men who are doing research work, but we cannot pry them loose from where they are, but alas, the tragedy is we haven't men in the world to-day; we haven't enough to even do one per cent. of the work that is demanded right now in interpreting the relation of mouth infections to systemic infections, and vice versa. Dr. Mayo said last month that at this moment we should have four dentists to every one that exists now in order to look after the interests of humanity. Not only for their own sakes, but for the State's sake. What does that mean? Well, my dear brothers in the profession, it means we must put our shoulders to this wheel. We have a great responsibility as a dental profession, namely, to help interpret the relation of these mouth infections to systemic infections. He also said to me on that occasion, as he did in Boston some weeks ago, we have learned as a medical profession doing research as we are in our institution, that these problems cannot be solved by medical men; they must be solved by men with a dental vision. Where are the men with the dental vision?

Unfortunately, when we try to pick out the men with dental vision, that is all they have got. Oh, the men with the medical and dental vision are the men that are wanted; the man who is big enough to see all the physician sees, and also see what the dentist sees—these seeing both at once are the men we need. I visited a hospital in Chicago not long since, and one of the leading bacteriologists took me through one ward after another and showed me the many cases that were being treated and helped, because they had treated the mouth infections, and then we came to a room, and he said: "There is a great joke in this hospital. We have got to get a new room to store the teeth in. As a matter of fact we are extracting so many teeth in this institution we have really got to get a new place to store them. I said to him, "What proportion of the teeth that are extracted in this hospital are in your judgment related to the other infection that the removal of the teeth did cure or did relieve?" He said, "I have thought of that many times, and I have thought that three or four out of a dozen." The average number of teeth extracted in that hospital under the direction of the medical men, he said, was about twelve, and in his judgment as a bacteriologist not more than three or four of the twelve ever should have been extracted. We are honored, I understand, and I am glad it is so, to have a number of the medical men with us to-night. I don't know what your practice is here, but I do know that I go to cities

where the feelings of the medical men sometimes are so extreme as to even demand that every tooth that has a dead pulp is a menace and should be removed, and if it isn't giving trouble it may give trouble.

Now, that is almost as extreme as a physician as perhaps are 70 per cent. of the dental profession, who rather plume themselves and say, "Well, perhaps so and so is not competent to save this root, but I can put a bridge on that will be all right." I say the dental profession are taking the other extreme and are saying, or thinking, and are allowing themselves, perhaps, to be misled—or else they have not informed themselves of the danger—and they are going right ahead and putting dental work on teeth that are already shortening the lives of those patients. I believe and know, just as much as I know I am sitting here, that a lot of my dental operations have helped to shorten the lives of patients. I would give a great deal if I had not done some of the work that I have been doing. I believe absolutely that I have put bridges on to teeth that already had an infection, and that were undermining the health of those patients, and I did not suspect it. I have had the privilege of undoing some of that work, and if God will spare me I hope to undo quite a lot more of it. To show you that I have not been a gold crown advocate I may say I have never put a gold crown in any person's mouth forward of the second bicuspid. So you see I have not been a slave to the gold crown habit. I have refrained from devitalizing pulps where I could accomplish the result in some other way, but I have felt I was so skilful that I could attach bridges to teeth that had deep pyorrhea pockets beside them. I thought I was so skilful that the patient was wonderfully fortunate to be in my hands, but I know very well that they would have been better off in the hands of some man entirely unknown to the community, but who with his conservatism was satisfied to practice a great deal less scientific dentistry perhaps, but would use the forceps more frequently than I would. Well, some medical people will say, "That is what I expected, and that tooth should be extracted." That is just as far from the mark as the other statement, for the time has come when we can distinguish the type which is a dangerous type of infection from one which is not. Now, which is the greatest tragedy which has developed in this entire field of research during this last two or three years? I know of none that is so significant and so appalling, because of its subtleness, as the abscess. The dental abscess that is causing trouble in the mouth of the patient is, as a rule, not the one that will be causing arthritis or myelitis, or a heart affection, not nearly so as that type of dental abscess that produces no local trouble. Let me repeat: Of the last dozen cases that we have studied and treated for arthritis there has not been a single exception to the fact that the lesions which we relieved and treated improving the patient's condition were giving no local trouble. Why? The very type of infection answers the question. What do I mean by the type of infection? Here we have a rapidly developing abscess with a great deal

of inflammation and pus formation. We have not got a simple streptococcus infection; we have a stercoremia infection, with some of the ancillary contaminations with it. But when we have a pure streptococcal infection of the type that produces lesions that I referred to, almost invariably, if not invariably, they give the patient no trouble. Now, this seems like a contradiction, but if that organism produced a very much more severe reaction in the human body it would be a great deal better for the body—if it was worse it would be better. That seems like a strange thing, but what does that mean? If an organism growing in your body starts up some trouble in the body and brings forward the resisting powers of the body a new element is created, a chemical substance that reacts against that organism, and the body politic, our united body, drives it out. We build up a resistance, I say, and we destroy the organism. Why? Because it irritated our bodies. But when it grows within our bodies without producing an irritation the body does not react, and therefore there is no anti-body built up to destroy it, and consequently it lives on and on and the body is almost indifferent to its presence. Here is another strange but rather important apparent contradiction. The lower the virulence of the organism the more subtle it seems to be in producing these grave lesions like the arthrities. The lower the virulence of the organism the less tendency it has to produce a reaction on the body, and the more certain it is to produce those lesions like the arthrities. Now, we will see some reason for that. If we were to go down to a restaurant to-morrow morning, and if you would take along with you several other species besides the human species—let us say a porcupine, a grasshopper and an ant—you all go into the restaurant, and we will assume you are all going to order from the bill of fare. What would be the difference in the meal you would order? As a matter of fact you would all order nearly the same thing. What would it be? It would be largely protein. Why? You have a digestive apparatus that would digest a nice piece of chicken, like we had this evening, and I found my digestive apparatus inside could dissolve that chicken splendidly. Now, the porcupine would not take that. He would select a nice piece of bark, and another of the organisms would select a piece of horn. You could not digest the horn, and you could not digest the bark, so those various forms of life would select the very thing that they could digest. The point I am trying to emphasize is that the only difference between you and every other form of life, including those streptococci, for example, is that your digestive apparatus is just a little different to theirs, and yours changes and theirs changes. They have the property of living on certain tissues of your body, and your body has the power of taking in food, and can select certain of those products for different organs of the body. Let us assume you have taken your piece of chicken. How does that chicken become part of your muscle tissue? You have two different kinds of digestion, and the micro-organism has also. You have

two kinds of digestive fluids, one in the stomach, another in the arteries and veins, in the blood stream, a digestive circulation, and the protein you take into your body, as, for example, the piece of chicken, is split up. It does not go into the body as a whole protein; it is divided up as you take an axe and split up the wood into fibres, and afterwards it goes into that other circulation. Then each cell of your body has digestive fluid, and these take the particular pabulum that it wants, just as your body, which is a multiple of cells, and each streptococcus has one digestive fluid outside its body and one inside its body. All living things must do three things; they must eat, they must assimilate, and they must excrete, and you and the pabulum are precisely alike, as we will see from different viewpoints as we go along. When you take into your body some protein which gets into your circulation, which has not been properly split up in your stomach, what happens? Why, immediately the chemistry of your body is called forward and you build up a new enzyme, a new chemistry, to dissolve or digest that very thing; and the thing that happens is this: If, for example, you have got, we will say, an overdose, you have overeaten, in other words, bananas or eggs or milk, or any kind of food, in so large quantities that some of that protein gets from your stomach through into the circulation without having been properly split up, the blood immediately produces a chemistry that splits up and digests that protein that has gone through, and ever after that if you eat eggs or bananas, or whatever the thing is that has poisoned you, immediately that chemistry is ready and splits up that protein, and that protein when split up in your blood is part poison, and that poison is the thing that is making you sick, and you can't eat those things. When you get typhoid fever, for example, the organism grows in your body, and that is precisely what happens. You react—that organism in your blood has called forth the new chemistry which tears down and splits up those organisms, part of which are poison, and that poison makes you sick. You are walking up and down the country with those organisms in your body; they are incubating in your system, but it is not until your body reacts that you are sick. What does that mean? Simply the time comes when this chemistry is so perfectly developed that immediately the new organisms come in the body rushes to the rescue and produces a large amount of this chemistry and destroys that organism.

Now then, what happens when the bacteria of your mouth, for example, gets into your blood system? They do not stop there, and consequently a resistance of the body has not been stimulated, but pretty soon your body builds up that chemistry, and immediately it does you are sensitized to it, and day after day your body is reacting to that very thing to which it is so sensitive. Now, what is the significance of this? Many of you know this, but for those who do not I will call it to your attention. If you were to take a little of the white of an egg and inject it into your

circulation to-day—just the ordinary white of egg which your stomach would digest—if you inject it into your blood system circulation to-day it would not do you much harm; it would be in there as a foreign substance, but your body immediately builds up the chemistry to destroy that protein, and in ten or twelve days if you put a little bit more white of egg in it will kill you. Why? You have been sensitized to that white of egg, and even so small a fraction of any of the proteins as sometimes the millionth part of a dram will be enough to sensitize the body so that when the subsequent dose of that gets into the blood system the reaction is most violent on the part of the whole body, because it so rapidly splits up that protein. You all have seen this illustrated, for it is the man that is apparently the strongest that dies with typhoid. Why is that? Because he had to tear down so many of those organisms immediately that his reaction has been stimulated. So it is the strong men that die of this disease, because nature reacts so violently and so much of the poison is set free. There are scores and scores of people that are going up and down our streets suffering from a poison that is going into their body by absorption of protein from the bacteriological infection of their mouths, and they are so sensitized to it that the dental operators know what I speak of so well—you know that if we undertake to scale too many of the teeth the same day they are violently sick. I remember one woman where I simply took care of about one-quarter of the teeth, removing the debris from the teeth, because in that operation we open up the circulation slightly and let in more of these toxine poisons, and I said to her, "This is all we had better do to-day; let us stop now and you telephone me to-morrow and let me know if you have had a reaction," and although that woman had walked to the office and walked away apparently in her normal health, which was much below par, the next day, even with the telephone within arm's length of her bed, she reached to get it to telephone me, as she had promised she would tell me how she felt, and she was so sick she threw herself back on the pillow and said, "What is the use?—he told me I would be sick anyway." She was simply reacting to the toxine, to the protein that was being absorbed from that poison. Now, that is going on in a large degree in so many bodies, and there are probably hundreds and thousands of us that are beginning to die at 40 and 50 years of age because we are over sensitized to those mouth protein poisons.

Now, I will not have time to go very far into that discussion, and I will take the slides at this time and discuss first some of the typical kinds of lesions, and because of the impossibility of covering the ground I should like to limit myself very largely to streptococcus infection. The first slide which we will put on will be one showing the Research Institute of the National Dental Association, a building that has been purchased for the dental profession of the United States, a building which contains something like thirty rooms, and I am glad to say that within six weeks after

the call went out to the dental profession for assistance to buy that building one-third of the entire cost of the property was in our hands, either in cash or pledges. It is also significant that these researches that have been going on now for about three years, and which have entailed an expense of something like \$75,000, 90 per cent. of that amount has come from the dental profession as voluntary contributions. This building which you see has something like 30 rooms, and has another building at the rear with a splendid auditorium, and we have facilities for taking care of a large amount of research work. I will be glad to furnish anybody who is interested with a more detailed description by mail.

In this picture we have a typical infection of a streptococcus type, producing no general disturbance. This patient was out of business for four years, and for two years of that time was in sanitariums and hospitals. He had symptoms of gall-stone and peptic ulcer, or stomach disturbance of various kinds, and twice was taken to the hospital for operation. On both occasions it was decided not to operate, because it was so uncertain that there were gall-stones present. He had fallen off in weight from 156 pounds to about 120. Twenty years previous to the time of the presentation of the patient he had a boil on his chin, which in all probability was an external fistula to a dead pulp in a tooth. It was not recognized that the pulp in the adjoining lateral was dead. Our examination with the radiogram showed the presence of the abscess. We opened into the right lateral and removed some of the infection and inoculated it, and studied the organism with our various methods, and were able to produce in animals the typical liver infections. By typical I mean corresponding to the infections that we get consecutively with that type and strain of streptococcus. With no other treatment than obliterating the area of infection at the two roots, opening up the canals and thoroughly cleansing, this gentleman gained 25 pounds in twelve weeks, and went back to his business.

He lived in another city, and his physician has written me that he has no doubt but what we did remove the entire cause of this man's trouble. The last time the man called on me he said he worked from seven in the morning till eleven at night, and looked as stout and well as could be. The next slide shows the typical lesions in the animal, and the section of the liver shows a typical focal abscess, which we get with this strain of streptococcal infection. I want you to note that the blood vessel is entirely blocked. The kidney of this animal shows a cloudy swelling, but without an abscess, that is very characteristic of this type of infection. Here we have the picture of a young man who was treated in the clinic of Dr. Hartzell, who is one of our directors of research supported by the Research Institute, and working in the University of Minnesota and in the hospitals. This man had not been without pain for nine months, and could not walk, could not feed himself, could not put on his own collar and could not dress himself. At the time this picture was taken, as you can see, he could

put his hands behind his back and up over his head. The next picture shows us the lesion that was found. This man had been in the hospital for nine months, and the treatments given him were doing him no good, and he was turned over to our department. The medical men were not able to satisfactorily find relief for the infection. The area of absorption is shown around the molar. The removal of the dental infection and the making of a vaccine entirely removed the trouble, or sufficiently so that he was dismissed from the hospital in six weeks. He could then run up five flights of stairway in the Donaldson building, one foot above the other, where five weeks before he couldn't put his foot to the floor in the hospital, and no other treatment than the removal of the infection and the vaccine made from this culture. Here we have another case from Dr. Hartzell's clinic. This woman had suffered for three years. You notice the ankles are swollen, and the knees and the hands, and she is very much emaciated. She suffered very great pain, and month after month they were placing on record "present treatments doing patient no good." The next picture shows us the dental infection at the apices of some old roots, and with no other treatment than the removal of these roots and the making of the vaccine the trouble was removed. We do not emphasize the vaccines much. We believe they are helpful in certain cases. In a few weeks this woman was able to stand erect on those knees that had not been straightened for many months. She was dismissed from the hospital and went back to her family of several small children who needed her very much. She has had no recurrence in twelve months. Here is a case from my own practice. We had watched this patient getting worse for fifteen years and we came to the conclusion that some dental trouble was the cause. The next picture shows us the area of infection around the bicuspid. With very little other treatment than the treating and removing of that infection and the imperfectly filled root which I had filled some twenty years before. The radiogram which has done splendid service showed the imperfection, and that woman now has thrown away her crutches. This picture shows a patient that is being carried to my office. The woman could hardly move her head or elevate her hands, but with no other treatment than treating the dental abscesses in that woman's mouth those joints that were so tied up that her knee joint could not be flexed one-eighth of an inch will now swing through quite a large arc, and very soon she will be on her feet. The pain is entirely gone and she has gained a number of pounds in weight. I think she will be walking around by midsummer at the rate she is improving. When that woman was put in the chair she could only move her head half an inch without moving her position on the chair, so rigid were her vertebrae, and now she can turn her head from side to side and look over her shoulder, and that is from the treatment that has taken place since November. I am sorry that I failed to bring the slides showing the infections in that woman's mouth. There were five abscesses all at the apices of teeth that had had

dental treatment, some with gold crowns and some with fillings. Only one of the five had a fistula. Every one of those teeth except the one with the fistula gave us a pure culture of the strains of streptococcus, and the one with the fistula gave us a mixed infection. Now, what is the significance of the fact that those teeth did not give trouble? That woman's teeth had been examined in the hospital for nine months, and this condition had been coming on for nine years, and they pronounced her mouth in perfect condition, and when I looked into her mouth without the radiogram I said there is only one tooth indicating an abscess, and that was the one with the fistula, and the tragedy is, as I repeat, that the very conditions that will give these grievous troubles seem to be invariably those which produce no local trouble. It means we cannot trust our own methods without having radiograms taken. Then we have here the case of a young man twenty years of age. His mother has been in bed for five years with an arthritis, and he has been suffering considerably with arthritic infection of increasing severity. I want you to note the anterior buccal roots were not filled. You notice the areas of infection. Our method of getting cultures practically in all these cases now is to get the culture from the apex of the root without the extraction of the tooth, before the extraction, in order that we may get a pure culture, believing that we can get the infection more perfectly and safely without extracting the tooth than by extracting. We did that in this case, and out of five in that area we were able to get the pure streptococcal culture of three by aspiration. There was no extraction done and yet he has had his infection apparently entirely relieved. I say that with the emphasis on "apparently." I believe that that young man is in danger of having that infection recur. I doubt very much whether I have ever sterilized the area beyond the apex of a root by any medication that I have ever been able to use—I say thoroughly sterilized. I think we greatly reduce the infection at the apex, but I doubt if we entirely remove the infection. This instrument that we use for aspirating, we have a long rubber tube to it and have either glass tubing or copper tubing slipped into a glass tube and aspirate into the tube by sealing the small copper tube into the root of the tooth with wax or cement, preferably with cement, and almost invariably we can get a culture of the infection in the root of the tooth by aspiration, whether or not we can locate the organisms in the root itself. Dr. McDonagh requested me to leave one of these instruments with him and if you are interested he will be pleased to assist you in making one a great deal better than we often see. We find it a most indispensable instrument in connection with the treatment and diagnosis of these conditions.

A great many of the infections of the mouth select out tissues that we had not suspected a few months or years ago, and I will now show you a few slides illustrating that. The one I am presenting is of a woman who is teaching in our public schools and who had to give up her profession on account of

losing her voice. There was no apparent cause, but with no other treatment than the removal of an infected and impacted cuspid, and it was due to the infection not the impaction, that young woman had her voice entirely restored. The next slide shows the case of a young woman, now not a very young woman, for she has lost her voice for something like twenty years, or nearly lost it. She called me up on the long distance telephone the day before I came away, telephoning from another city, to show me that she could talk now with her voice, the first time she had talked long distance for a great many years, and her husband says her voice is better now than any time in nearly twenty years. She had no other treatment than the removal of the dental infections. Another important characteristic of a streptococcal infection of this type is that the alveolar bone does not recover normally as appears with other types of infection. Many of our dental men present will recognize this condition shown on this slide. Here we have a first molar, and you will see the area of infection at the apex. This gentleman had suffered from recurring inflammation of the throat and chronic bronchitis that took him to the doctor almost every week. After the infection was removed he has not had a recurrence for two years except a grippe infection, which we could not assume was caused by the old infection. I want you to note this, that the result is that the bone does not restore perfectly. Now, why? We found three months after the extraction of that tooth that we could get strains of that organism from the alveolar bone surrounding the socket by drilling into the bone. I feel very strongly that practically every case of streptococcal infection of this type which is of a very low virulence, will carry that infection for many months in the bone around that socket, and every tooth that has such an infection must have a very thorough curettement to remove that infected bone, and not trust to simply the removal of the tooth for obliterating the infection. That is a thing that we as dentists have not appreciated. Sometimes the infection may be very extensive. Here is the case of a rather beautiful woman who got an infection in the mandible from the central incisors, lower, the result of which was that a necrosis destroyed the entire mandible so that she lost all the teeth from the third molar on one side and the second molar on the other and the mandible from the third molar on one side to the second, on the other. The chin was gone entirely, practically. That was not a streptococcal infection. We do not get much if any pus flow with this type of infection. As a rule those extreme infections do not come from the type of organism that will produce these disturbances. While we are at this I will ask you to note that the stretching pressure on the new forming bone was sufficient to make that chin grow out to almost its normal position. Here is a picture of the same woman as we see her on the street to-day, and again she has got a chin. By having that bone stretched as it was growing about an inch and a half of new bone has been made to grow out of about half an inch of bone that attached those two

stumps. She could only take a liquid diet when we started that stretching operation, and now she can eat as large a meal as anybody of as coarse food practically.

There are some types of infection that will be carried in dead teeth for a great many years. The next is the case of a woman whose teeth were giving no trouble at all, but they were discolored. I felt that it was my duty to remove the dead and putrescent pulp. I opened into the dead tooth after demonstrating that it was dead, and that tooth that was giving her no trouble took on an active form of inflammation so severe and rapid that by ten o'clock that night she had a fever of 103, and the next morning when she came to the office her head was all tied up and she had a very high fever and very much prostrated, so much so that she almost had to be carried in and threw herself on the lounge. By that time we had made a sufficient study of the organism to identify it. It was a free bacillus which grows with two expressions. When it does not get oxygen it produces very slight inflammation locally, but by opening up the tooth and letting the air or oxygen in we get an entirely new expression from that same organism, and the opening up of the tooth allows it to take on a new condition of very grave irritation. We asked this woman if she had had any severe illness, and she said seven years previously she had pneumonia. This bacillus very commonly grows along with the organism of pneumonia, and in all probability this tooth had its vitality lowered at the time of the pneumonia and it remained there all these years, and this illustrates how a patient may carry in the body an organism that is ready at a moment's notice to re-infect with a very grave infection, which organism came in at the time when they had some general infection, and that suggests what so many dentists in this room have seen over and over again, an epidemic of abscessing teeth. Now, I find very few physicians have sympathy with that. They do not understand that, but as a matter of fact the men of the dental profession have had the experience of seeing, perhaps, more abscessing teeth in two weeks of one period than they may have seen for six months before or after. What is the trouble? A streptococcal infection is going about, or some other form of infection, and the organism goes through the system and lodges at the apices of the teeth where there is a good culture medium, and immediately that patient is troubled with abscessing teeth, the infection gets to the teeth through the blood stream and causes that epidemic.

VALUE OF VACCINES.

The next slide is particularly interesting because it shows where a third molar was extracted, and under normal conditions the alveolar bone has restored more in six weeks than in some other location it would in six months. This is a streptococcal infection that was producing a chronic irritation of the throat with bronchitis, which cleared up entirely after the removal of this infected tooth. This slide will suggest to us the use of

vaccines. Where shall we use vaccines, and how much of them shall we put in them, and what kind of vaccine will we use? We have the extremes of opinion in the dental profession as we have in the medical profession, but my judgment would be and is that vaccines can be beneficially used in very carefully selected cases, but we are liable to place altogether too much confidence in them. This slide shows a young woman twenty years of age who had a necrosis going on for something like four months which did not subside or respond to local treatment. She was overwhelmed with an infection, and the making of a vaccine from the contents of this pocket which is shown completely changed the condition. The pus had stopped almost entirely in three or four days and the sinuses were healing up. Before that time we could inject a solution of medicine into the seat or focus of this necrotic area we had to get at both the lingual and buccal to the third molar, and even the second molar, and with no other treatment this picture was changed completely and the young woman was restored in a very few days to health again.

The next picture shows a gentleman fifty years of age. A vaccine was made, and the restoratives gave him improvement for something like five weeks and then lost its efficiency entirely. Now, what is the difference between these cases? If you have people with lots of resistance and lots of reserve who are suddenly overwhelmed by infection you may bring out nature's hidden strength, as it were, by means of a vaccine and help them to overcome this temporarily overwhelming infection, but with people beyond fifty years of age we must not expect much from vaccine. The next slide shows one of the tragedies of our modern splendid dental service. This man was willing to pay for the best dental service that could be got in the world, and he was able to pay for it, and was trying to pay for it, and yet for something like five years he has been compelled to deny himself practically all the privileges of public life because of irritation of the bladder, and during the last twenty years he has been suffering with that trouble. A bacteriological culture from the urine gave us a typical streptococcal infection. The radiogram showed this area of infection where the absorption had been going on for years. We got a very prolific streptococcal infection, and with no further treatment than the treatment of that tooth which the dentist had very securely anchored to the next tooth back of it, with no other treatment than the extraction of that tooth the irritation of the bladder cleared up. Now, is it not a tragedy that we as dentists will hitch onto a sick old tooth which nature would eliminate if she could? We will hitch it onto some good healthy tooth and prevent nature from throwing it off, and I have no hesitation in saying that the Cliff Dwellers with their healthy mouths without decay were infinitely better off than our civilization with our boasted dentistry, because we do not know better than to hitch sick teeth onto well teeth.

This slide shows the case of a whole series of infections nearly, starting at first with an acute inflammatory process in her joints, then a heart infection, then a liver disturbance, so much so that they thought she would have to be operated on for gall stones and then peptic ulcer. Then finally a carbuncle from which her physician thought he took a teacup full of pus, if such were possible, and then when I saw her at one time I think she had probably a hundred boils of various sizes. Her physician said he did not take any stock in all this bunco about mouth infection, and he didn't think the bad teeth had anything to do with it, and if she didn't want them out she didn't need to. Now, that to me is a tragedy, that the men of our dental profession cannot have the united co-operation of the medical profession, and I use that as an illustration, and I hope it is a rare one. I am sorry to say it is not a rare one in our city to find medical men who do not yet recognize the importance of mouth infection.

Now, I wish to differentiate between mouth infections and lesions that produced by impacted teeth and the lesions that produced by pus under pressure. We were told by Dr. Mayo last Monday evening that pus will produce a typical type and successive chain of expressions of the nervous system, when not under pressure, produces an entirely different type of expressions, when under pressure coming not from pus but from an impacted third molar we get a re-action on the nervous system that is entirely different, and very often involves a mental disturbance so grave that we will have these people locked up in our sanitariums. Here we have the case of a young woman who has been in an asylum for two years, part of the time in a plaster of paris jacket because she was so violent. She had all sorts of hallucinations. With no other treatment than the removal of the impacted upper third molars and the removal of the remains of the distal root of a second molar that was entirely grown over she was completely relieved so that in two weeks she was dismissed from the asylum as cured, and has been for the last nine months studying grand opera in Boston, putting in five hours a day at her studies and is apparently perfectly well again. I want to emphasize that the type of expression that comes from an impacted tooth is quite different from the expression that comes from a septic infection, and with no other indication but the deposit as shown in the next slide we will have an acute inflammatory process take place.

I presume one of the greatest contributions that has come from this entire field of research has been made just recently by Dr. Hartzell by showing that even the amount of infection we may have in these spaces will be sufficient to gain entrance directly through the open lymph channels and blood vessels and infect the apices of roots, and a little more deposit produces this amount of inflammation. This slide shows what I should say is our graveyard of dentistry, the gold crown. I do not know of any operation that we as a dental profession have made that has produced so

much local and general disturbance as the gold crown, because with it we may cover up an infected pulp, and not only that but primarily we may produce an irritation at the gingival margin and by that irritation start an infection that may involve not only the tissues around the tooth but involve the apices and all the periodontal tissue, and secondly, all the tissue parts of the body. Very frequently I have slides referred to me such as these, although these were taken from Dr. Black's book, where particularly the medical profession are not interpreting the slides correctly. Here we have a dental abscess for example, which is not a dental abscess, but a nerve teramin.

This slide is put in to show you the proper position of the X-ray tube to get the proper light and shade. If, for example, we have the angle of the rays at right angles to the long axis we will get a lengthening of the root, and if we make the angle of the ray at right angles to the film we will have a shortening of the tooth. The proper position or angle of the rays is at right angles to a plane which is halfway between the long axis of the tooth and the plane of the film as shown in the lower picture, which will always give you the shadow of the tooth the same length as the tooth itself. This slide shows the type of dental lesions that may produce very serious systemic infections without local disturbance, for practically all these cases were not giving local disturbance, and yet they were giving serious systematic disturbance. Here we have the typical abscess with a fistula into the hard palate. Here we have a blind abscess, and of all the types the blind abscess is by far the most dangerous and serious because it produces a type of infection that does not make a local disturbance usually, but does produce serious systemic disturbance.

If we had time I would like to emphasize the difference in a number of organisms in a healthy mouth and an unhealthy mouth. If for example we take the amount of debris from a decaying tooth that would be represented by a milligram, an amount that you could carry on the head of a pin almost, and count the organisms in it you would have all the way from 10,000,000 to 250,000,000 or 500,000,000 organisms in that small quantity, a thing we have not dreamed of, and when you realize that that milligram of material would only be a fraction of the total amount in the mouth we get an idea of the amount of infection we are carrying around with us. Then if we note the different types of mouths and the amount of infection in each we will readily see that an immune mouth with 10,000,000 and a dirty mouth with primary caries with 500,000,000 organisms we have the answer almost immediately for the decay, the number of organisms being almost in proportion to the decay, and I have here a slide with the columns illustrating this.

If we had time to go into study of the pathological aspects, we would find this gingival notch to which I am pointing on the outside of the tooth may have so slight an infection that the gum is only slightly reddened, and

yet the blood vessels as shown by Dr. Hartzell will come to within three or four or five microms of the surface, and all the germs have to do growing in that area is to travel through that four or five microms of distance, and when you consider that a microm is the 25,000th part of an inch, and when you realize they have to go less than 1,000th part of an inch to get directly into the veins you get an idea of what importance it is not to have the seal broken at that point. The human body is a sealed envelope as nature intends it to be. If any one of us had an abscess area as large as a penny on our hand our physician would be very careful to have it covered or protected, but if we have an abscessing area or pyorrhea pocket one-eighth of an inch deep around each tooth in the head how many square inches of abscessing area do you suppose we have? Four square inches. Now, what surgeon or physician would allow his patient to go for one moment with that much saturating surface from which infection can come, and yet we pay no attention to it because it is in the mouth. Now, the large part of infection seems to enter the system by means of the blood stream, and the organisms pass through these large blood vessels into the smaller ones and finally overcome the capillaries, and the blood has the property of causing a coagulation so to speak, a grouping or clumping of the bacteria, and that clumping makes it possible for them to block up these little end arteries, and you will see that process taking place when we come to the later pictures. We have some very interesting cases of this blocking of the arteries. (Pictures were shown of stomach infection and skin infection and so on.)

I presume no work of this decade is so valuable and significant as that of Dr. E. C. Rosenow, formerly of Chicago, but now of the Mayo Institute. He has shown when he has taken the germ from an appendix for example and inoculated it into animals that the lesions produced in that animal would in 68 per cent. of the cases be the appendix of the animal. That means that organisms have a specific selective action for certain tissues. The strain taken from the appendix selected the appendix in the animals, where if the organism was taken from streptococcal cultures from other sources than the appendix, only 5 per cent. had infections of the appendix. It is the same way with the stomach ulcer, 65 per cent. had infection of the stomach when it was taken from the stomach, and only 20 per cent. when it was taken from miscellaneous infections, and it seems to follow on through in the same way. What does that mean? He suggests it means this, if you and I have an infection in our mouth that is selecting out our liver or our appendix or our stomach and producing stomach ulcer, that germ may have so definite and aggravated a form that if we place it on a drinking cup and somebody else takes it off that drinking cup we may possibly transfer to that person an infection of gall stones, an infection of peptic ulcer, or some other infection of the body. That seems almost too far to take the possibilities of this, and yet who knows but that may be true. The thing that

seems to be suggested to us is that we must be exceedingly careful to keep our mouths just as clean as possible and prevent the possibility of carrying it to others. Dr. Rosenow has done probably the most important work that has ever been done with respect to mutations of organisms, and in this slide we see illustrations of his work. Some of the bacteriologists challenged his work and gave him a strain of pneumococcus and asked him to change it to streptococcus, and here we have an illustration. That means they are simply expressions of the same organism. Mutations are very unlikely to occur except in rare cases. Now, the medical men look in the patient's mouth to see whether or not he is suffering from a lead poisoning or mercury poisoning or phosphorus poisoning, simply because the most susceptible tissue of the entire body to poisons is the tissue surrounding the teeth, and that is probably the reason why pyorrhea is so prevalent. That susceptibility is shown so clearly in this case where some devitalizing paste was put into the tooth of this dog and with every precaution in sealing it into the tooth, using the cement and amalgam over the cement, yet the result of the amount of paste that passed through the apex or through the wall of the root and came back to the gingival border was enough not only to destroy the gingival border around those teeth in three days but to produce this necrotic area on each side of the tongue of the dog, showing the tremendous susceptibility of that tissue to the irritation of that drug. The next slide will show us some of the lesions at the apices of the root, but that is so large a subject we will not have time to dwell on it, except to say that we of the dental profession should hesitate to use these things as the men of the medical profession, and the surgeons hesitate to use bichloride of mercury in the abdominal cavity. A few years before that he used a rather strong solution of carbolic acid, but he does not use the strong solution of bichloride to-day, for he has found out that what kills the germs will kill the tissues, and he has found the thing he must do is to keep out of nature's way. We dental surgeons as a profession are still putting things into roots a dozen times too strong for the health of those tissues.

There is in the peridental tissue a network of cells running all the way from the gingival border to the apex of the root, and that chain or network seems to be a very important factor in the development of pyorrhea, for pyorrhea does not develop from a point around the tooth but develops continuously and progressively towards the apex of the root. Why this is so has never been solved, but it has been suggested partly by the finding of this network of epithelial cells by Dr. Black, that it will be shown that that network is related to pyorrhea. We have in the mouth an organism that has caused a great deal of speculation in the last year or two, the ameba, but we do not believe it is important as being a factor in pyorrhea. We believe it is probably there because there is lots of food for it, which food is the breaking down lymphocytes and leukocytes. We do not believe, as I said, that it is to blame for pyorrhea.

Here is the picture of a young lady who has had a very sudden loss of her immunity. Suddenly her teeth are decaying very rapidly. The teeth were very sensitive. We have taken the debris from one of the cavities and put it on the microscopic slide, and you will note it is almost a pure culture. We then show a culture from that same patient's mouth showing organisms from other parts of the mouth, and you will notice an entirely different type and variety. On this slide we have an organism that has been blamed for pyorrhea and of being able to carry bacteria into tissue that is capable of infection. You will note how slowly it moves. (Shows various kinds of organisms.)

The next picture will show you these organisms which were taken from a blood system of a patient suffering from pyorrhea infection. We inoculated a frog with a quantity of that organism, and it produced in the blood vessels of the frog the formations that I spoke of. You will see, first, the rhythmic motion of the lung of the frog. We cut a hole through the frog's back, so to speak, and then another hole through the anterior chest wall, and let the light go through the hole in the back and come out through the hole in the front, and we got this view of the circulation. We have, first, the rhythmic motion of the lung as it is stirred with the heart beat. You will notice the blood system as it rushes through the veins and the arteries and the capillaries. We injected into the circulation two minims of a media carrying this organism, and the effect on the frog's blood was to cause what you might call clumps of bacteria blocking up the small end arteries, just as it happens to us in our bodies when we have an invasion of streptococci, or any other invasion of infection. The effect is a blocking of the end arteries and the formation of a clot. You will see the bacteria block up and block up, and then the pressure behind will break it up and it rushes away.

There was a time when you and I were one sole organism, very much like some of these organisms we have seen on the screen. We had many characteristics in common, so, as a matter of fact, they are very close cousins to us. Keep in mind three things now, for we will have to make these observations by inference: How do mutations occur by which new strains of bacteria develop in an abscess; second, how do these various forms of bacteria differ, and in what respects are they like ourselves, for, as a matter of fact, there was a time when each of us was a single germ cell, and at that time we were very, very much like these organisms we have been looking at, as you will see, and, thirdly, what are the conditions that determine the development of those organisms? The first of the pictures will show you the fertilizing process of certain forms of egg. I know of no operation in chemistry that is so rapid and so spectacular, and when you realize that practically all those processes are purely mechanical, it is wonderful. It is a process of physical chemistry. We will see how these bacteria produce the lesions they do and select the tissues they do without any conscious effort

and without any influence except purely a matter of chemistry and physics. The first film will show the fertilizing process of a form of sea life. These organisms deposit their eggs into the water and they are fertilized in the water, and they behave almost like bacteria. See how quickly these little male atoms rush to that egg purely by a chemical process, and the first one that gets in is the only one that gets in, and as it does so it produces a chemical action on this membrane which prevents any other germ from getting in. This chemical process is so rapid that it takes place in a very small fraction of a second. As soon as the egg is fertilized, it divides into two, and presently into four, and then we have formations of eight. Here is an egg that did not fertilize, and you see the mass of germs that have been attracted purely by chemical attraction. Now, that process means that this nucleus of life has had carried into it the determiners of character and the determiners of resistance, and as it has been carried into it, it has been subject to modification of environment. Now, the thing I want to emphasize is, there is one condition under which an influence may take place, put there rapidly and rapidly modified, that is the determiner of the resistance of the body. Those are principally just when the membrane is forming in the early stages of development, and that may throw some light on why some people are subject to typhoid or inflammatory rheumatism, and so on. You will notice how these eggs separate or part as soon as the first germ enters, and that chemical process takes place, as I said, in a few seconds and is a physical operation that we can hardly conceive of, because of its rapidity. It is not difficult to modify that development process by the addition of very small quantities of chemicals, and very many people are susceptible to disease because at the time they were being fertilized as embryonic forms of life one of the parents, or both, was under the influence of alcohol, or the mother was suffering from the retention of some systemic poison—acid particularly, probably, and you will see some pictures of what was caused by the addition of a very small portion of alcohol, and how it is capable of making monstrosities, some with only one eye or with the eyes too close together, or, in some cases, serious head deformities and nervous deformities. The same deformities are produced in guinea pigs. In this case you can see the heart beat in this embryonic form of life. Here is one showing a head deformity on account of being treated when it was an egg with a very small percentage of alcohol. Many people have their resistance lowered because of influences that have come into their lives at the time that the determiners were being transferred through this very sensitive stage. In contrast to that, you see here a few cells of tissue taken from a frog's throat, which would be identical to those taken from the human throat. Here is a specimen showing two mouths, and if we cut the head off entirely and cut it up in sections, they will respond to food just exactly as if the rest of the body were there, showing it is an entirely mechanical process. Here we have a young squid, and

you will notice it has a sucking bottle. Nature gives some of these organisms a quantity of food to sustain them for a time. You can see him drinking out of his sucking bottle. Here we have a pair of twins with their backs fastened together. Here is a monstrosity simply because we added a little alcohol to the sea water in which it was developing.

In conclusion, I want to show you how mechanical they are when under an electric current. They couldn't go in any other direction if they wanted to, and they turn in whichever direction the current is changed. When the current is changed too quickly, they simply oscillate.

I thank you very much for your most splendid attention. (Applause.)

PAINS AND AFFECTIONS OF THE MOUTH AND TEETH WHICH MAY BE MANIFESTED IN OTHER PARTS

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Read before the Academy of Medicine, March 13, 1916.

The subject here presented will deal in a superficial way with the relations in disease, which may exist between the mouth and teeth and the eye, ear, nose, throat and accessory parts. There will be no discussion of the anatomical relations of the parts, merely a discussion of the clinical relations in disease.

Every dentist of experience knows that there are many pains and discomforts referred to the mouth whose origin is often very remote from these parts. He has also learned that occasionally there are inflammatory processes appearing in the mouth which are merely extensions from contiguous parts. Likewise the rhinologist, otologist, and the ophthalmologist have learned that all pains and discomforts referred by the patient to these parts are not of local origin, and, in fact, many of the apparent disease manifestations observed are of other origin. In view of these observed facts it is fitting that we should now and then discuss such questions together.

The symptom which is most common to all these associated parts is pain, and the chief cause of pain having its origin in the mouth is infection. Clinicians generally agree that pain caused by pressure is more likely to be referred than pain which is not. It has also been observed that pain from infection and under pressure may be both referred and local.

The most common cause of referred pain about the mouth and teeth will be found in impacted and infected teeth. The restless, feverish teething child suffers many pains not referred to the mouth at all. The incorrigible, restless, immoral boy may very often be suffering from a form of irritation to his nervous system, not referred to his mouth, but to his eye, nose or ear, or have no consciousness of pain, while as a matter of

fact an impacted tooth may be the cause of his mental bias. Patients suffering pains in the regional distribution of the fifth pair, or having symptoms of nervous origin, should have a thorough mouth examination. Any tooth which has not erupted at its regular time must be looked upon with suspicion. Erupting and non-erupted deciduous teeth give rise to more general and referred symptoms than similar impacted permanent teeth, though there are many cases recorded of patients relieved from serious mental derangements by the removal of impacted teeth. Within my own experience I have seen marvelous recoveries from the removal of impacted teeth. About a year ago a man was referred to me for examination who had suffered from severe pains referred to the eyes, causing almost total blindness for certain periods, which was completely relieved by removing an impacted cuspid. A few days later Dr. Paul reported a case of deafness of years standing completely relieved by the removal of an impacted lower third molar.

An impacted or partially erupted lower third molar is a very common cause of recurring sore throat, or tonsilitis. Infection occurs around the tooth and extends to other contiguous parts. An oedematous uvula is likewise often an extension from an infected upper third molar.

The most commonly impacted teeth are lower third molars, upper cuspids and lower second bicuspid. In all cases of obscure pains referred to any part of the distribution of the fifth pair should demand a thorough examination for the presence or absence of all the teeth. A tooth is not free from suspicion of impaction unless it is fully erupted and in normal relation and occlusion. Many third molars and cuspids to the casual observer are erupted, but as a matter of fact are not free in their positions, and may cause severe reflex disturbances. Almost all infections about the teeth are under pressure, hence their special liability to cause reflex disturbances. Dentists of experience have learned that the opinion of the patient as to the location of a pain is of little real value in making a diagnosis. Pain from infected vital dental pulps are intermittent, and are usually felt at the point of origin at the beginning of an attack and at its waning, but during its height it is more often felt in the ear, or the whole side of the head. It is not at all uncommon for patients consulting a dentist to have their ears filled with cotton wool, saturated with laudanum. Pains having their origin in teeth with vital pulps are not often referred to the eye, but pain from teeth the seat of acute dento alveolar abscess is often referred to the eye.

Infections from dental pulps may occasionally penetrate the maxillary sinus or the nasal cavity. My own observation leads me to think that few cases of empyema of the antrum come from a dead pulp in a tooth. There is, however, more chance of such an infection from an acute or chronic alveolar abscess. In the latter case there is an extension from a large area of infection. Even though a tooth would seem to be the origin of an acute

or chronic infection of the antrum, I am not so sure that any attempt should be made to drain the sinus through an opening made through the socket of an extracted tooth. Reinfection is so frequent through such an opening, and the difficulty of closing an opening which is large enough to be of any value in treatment makes one hesitate to ever drain through the mouth. I have opened into the antrum on many occasions for rhinologists in years gone by, but of late years I have escaped such responsibility. Most infections of the antrum come from the nasal cavity and ought to be drained into it. It is not easy to differentiate pressure pains of the antrum and those from infected teeth or the eye, which I know too well from personal experience.

Acute dento alveolar abscess of the upper lateral incisor or the cuspid are frequently so extensive that both the nasal cavity and the eye are involved far more than the teeth themselves, the patient himself having no knowledge of anything being wrong with the teeth. Following such attacks I have seen pus come from the nose and the eye. On one occasion I saw a sinus from an upper third molar open posterior to the pillar of the fauces. One can readily understand what difficulties the surgeons in these cases met with in controlling the pus. I must say I have seen some wonderfully unsuccessful surgical operations in the region of the mouth to get rid of pus which had its origin in a pulpless tooth. Every tooth which is of a different color from its neighbor should be under suspicion. Pus in the nose, maxillary sinus, eye, anterior part of the mouth should demand a thorough examination of the mouth and teeth.

Selections

RELATION OF AMŒBIASIS TO PYORRHŒA ALVEOLARIS

Because of its amœbicidal properties ipecac or its alkaloids has been suggested as a suitable drug for the treatment of pyorrhœa alveolaris. In fact, so widespread has become its use that it is now spoken of even by the laity as "the cure for pyorrhœa" and its use demanded. Our experience with the drug is limited, but enlightening.

In our first series, thirty-three patients of varying degree of pyorrhœa were treated with emetin. In all where indicated roentgenographs were taken and teeth showing apical abscesses or teeth about which the disease seemed too far advanced to save were removed before treatment was commenced.

The entamœba buccalis was demonstrated before treatment was instituted. Emetin was administered either hypodermically in 1-3 to 2-3 gr. doses of Lilly's ampules, or Alcresta tablets (Lilly) two to three times daily. In every instance the smears failed to show the presence of the entamœba within four to seven days. On the other hand, we did not observe the marked improvement locally that has been reported from many sources. Some of the patients felt much better generally, but we question if the therapeutic action of emetin does not owe its value to some general effect which has not as yet been demonstrated experimentally by the pharmacologist or recognized by the clinician.

The patients were then sent to have thorough dental surgical treatment without further medical treatment and after this an improvement was noticed.

Very frequently when no amœbæ were found after dental treatment, by waiting four or five days the parasites could again be demonstrated. These would disappear after a few days of treatment, but only temporarily.

The rather unsatisfactory results of this method of treatment suggested that we try the emetin on a group of patients that already had had repeated and thorough dental treatment by competent dentists both locally and throughout the state. Twenty of these patients were examined by local dentists and thought suitable to test the value of emetin, since frequent and thorough instrumentation had failed to cure their pyorrhœa. However, only eight of these could be induced to carry out the prescribed course of treatment. Entamœba buccalis was demonstrated in all of them. They were given thorough emetin treatment and the condition of their mouths did not improve. One patient, still under observation, has had twenty-six injections of 2-3 gr. doses of emetin in addition to thorough dental attention, and

there is no improvement. If emetin is the cure for pyorrhœa we believe the specific action should be seen in this manner of treatment.

Though there may seem to be some evidence to the effect that the *entamoeba buccalis* is a factor in Riggs' disease, yet we feel that Koch's postulates are the ultimate standard by which the specific cause of any infectious disease must be judged. We are thwarted at the outset by the fact that up to the present time parasitic amœbæ have never been cultivated. However, we thought that it might be possible to find lower animals susceptible to infection with *entamoeba buccalis* and we carefully examined for parasites the mouths of 18 dogs. Bodonides, a flagellate protozoa, were found in three, but in not a single instance were there amœbæ. Many of these were old dogs with discolored teeth. Two of this group of animals were selected and at the juncture of the gingival margin of a molar tooth, pus was injected from pyorrhœa cases containing amœbæ. One dog was inoculated with material from three different mouths and the other from two patients. After several weeks of observation neither animal showed any signs of pyorrhœa, nor could amœbæ be found.

Recently we have taken five old dogs and made similar preliminary examinations for protozoa in the mouth, all of which were negative. With a periosteal elevator, pockets were then made about the lower molar teeth, producing considerable trauma. A few days later pyorrhœa pus-containing amœbæ were placed in these pockets. These animals have also remained negative.

There are many technical difficulties to be considered in any attempt to produce the disease artificially. Dogs are animals with unusually clean mouths and may well be highly resistant to infection. We have also examined the mouths of two rhesus monkeys and found that their mouths are free from pyorrhœa and Amœbæ. Pockets were made around the molar teeth, and pus from several sources containing amœbæ was injected. The result in this experiment was also negative.

We recognize the very just criticism that we have in no way disproved the possibility of *entamoeba buccalis* as the cause of pyorrhœa alveolaris. We do hold, however, that the burden of proof still lies with those who claim the pathogenicity of this organism and that there should be further attempts to produce the disease experimentally.

Sellards and Baetjer (9) have reported interesting results in the production of amœbic dysentery in cats by performing laparotomies and injecting amœba-containing material directly into the cæcum. Following their technique, with the co-operation of Mann, we have injected five kittens with *entamoeba buccalis*. These animals have all remained healthy, at no time showing any signs of diarrhœa, while two control kittens injected with *entamoeba histolytica* developed typical amœbic dysentery with demonstrable organisms. Guinea pigs are highly susceptible to amœbic infections, but four of these animals injected with *entamoeba buccalis* showed no signs of

dysentery. One died of peritonitis 48 hours after operation, but the other three are alive and normal.

At one time during our study of these cases we were very hopeful that the cause of pyorrhœa alveolaris had been found and the cure established. At present, our opinion based on statistical and experimental study may be expressed in the following conclusions:

1. Entamœba buccalis is found in at least 14 per cent. of mouths free from gingival irritation, and in relatively increasing numbers in accordance with the degree of pyorrhœa as we have classified them.

2. Clinically there is no parallelism between the presence of entamœba buccalis, the parasite amœba of the mouth, and entamœba histolytica, the cause of amœbic dysentery.

3. We believe that before the alkaloids of ipecac can be accepted as the cure of pyorrhœa alveolaris it must be established that they actually destroy the amœbæ in the mouth thus removing the cause of the disease.

4. Our experiments, few as they are in number, with Sellard and Baetjer's technique of intracæcal injection convince us that entamœba buccalis and entamœba histolytica are not the same organism. We also hold that before entamœba buccalis is called the cause of pyorrhœa alveolaris its pathogenicity must be demonstrated by animal experimentation.—*American Medical Association.*

CONCLUSIONS AND RECOMMENDATIONS FROM EXPERIMENTS ON THE STERILIZATION OF DENTAL INSTRUMENTS

CONCLUSIONS.

1. Moist heat is our best disinfecting agent for the sterilization of all metal instruments.

2. For the destruction of nonspore-bearing bacteria, moist heat at 80° is nearly as efficient as boiling, and for practical purposes can be used in place of boiling.

3. Instruments constructed of metal, whose complicated mechanism has heretofore caused them to be considered as non-sterilizable, can be sterilized by moist heat, provided the water is removed from them by immersing in alcohol subsequent to sterilization.

4. Instruments, whose construction does not permit of boiling, can be sterilized by chemical disinfectants.

5. There is need for more practical instruction in dental schools and clinics in the methods of sterilization, and the subsequent testing of the same by bacteriological methods.

6. Dentistry, which is a highly specialized branch of surgery, should use the two factors, asepsis and anesthesia, which have made possible the

wonders of modern surgery; with skill and precision equal to that of surgeons.

RECOMMENDATIONS.

1. That all instruments and appliances be rendered mechanically clean by washing in water with a brush or sponge.

2. That the following instruments and appliances be boiled or submitted to 80° in a slightly alkaline solution (0.25 per cent. sodium hydroxide) :

Artificial teeth used in matching and measuring,	Pliers, Pluggers,
Broaches and their holders,	Pyorrhea instruments,
Burnishes, Burs,	Polishing points and brushes (if not discarded after using once),
Chip blowers,	Reamers,
Chisels,	Root elevators,
Drills,	Rubber dam clamps and forceps for same,
Excavators,	Rubber dam weights and metal parts of holder,
Explorers,	Saws, Scalars, Scissors,
Files,	Scratch wheel on head of engine,
Forceps, extracting,	Spatulas, metal,
Forceps, foil,	Syringes, hypodermic,
Hand pieces for engine,	Syringes, water,
Impression trays,	Tongue-holding forceps,
Knives and lancets,	Mirrors (if 80° bath be used, but not to be boiled).
Mallets, hand and automatic,	
Mixing slabs, Mouth gags,	
Mouthpiece of saliva ejector,	

3. That instruments in the above list whose mechanical construction makes it difficult to remove the excess of water are to be placed in 95 per cent. alcohol for 10 minutes to remove water, then removed and allowed to dry.

4. That only instruments with metal handles be used by dentists desiring to follow this method.

5. That the following instruments be sterilized by immersion in 5 per cent. solution of phenol for at least 60 minutes: Mounted stones, tortoise-shell instruments, mirrors (when 80° bath is not used), other instruments not of metallic nature and which can not be replaced by metallic instruments.

6. That instruments, after using, be placed in a fluid medium, preferably clean water, to avoid drying of infectious material and to facilitate their mechanical cleansing.

7. That no instrument or appliance, used on a patient directly or indirectly, be used on any other patient until recommendations 1 and 2, or 1 and 5, as the case may be, have been complied with.—*United States Government Bulletin.*

Dental Societies

REPORT OF THE BRITISH COLUMBIA DENTAL ASSOCIATION

Speaking on Saturday evening, March 25, at the banquet of the British Columbia Dental Society, the guest of honor, Major W. B. Clayton, a Chief Dental Surgeon, C.A.D.C., told his hearers that as they had no precedent to go on in their great undertaking they espoused the method of going in and making one, and the result had been a record that had been unexcelled by any other unit of the army.

The corps started with a clinic at St. Martin's Plains with 20 operators and a fairly good equipment. Immediately the clinic was filled to capacity. The patients kept crowding in and the operators were overwhelmed with work.

"You can imagine our feelings," said Major Clayton, "when one morning we found an R.C.R. officer coming to our clinic with no less than 1070 men who needed treatment. All we could do was to look after the most urgent cases and fit them for service, and later attend to the remainder. All the overflows came to our clinic, and I tell you our men had to work night and day, and their accommodation was none too good, either."

"We found great difficulty," he stated, "in establishing our corps in France. They made us feel as if we were outsiders and that the need for us was not great. We stayed right with it, however, and it was not long before they found out that we could do a tremendous amount of good.

SHOULD BE NEARER FRONT.

The speaker, who was responding to the toast of the Army Dental Corps, proposed by Dr. F. P. Smith, said it was a well-known fact that about 10 per cent of an army was hors de combat on account of dental deficiencies, and when the plans of the corps were carried out they hoped to reduce this to two or two and a half per cent. Another phase of the question was that they wanted their men nearer the front. When men needed urgent attention they were forced to leave the trenches and come to the dental corps which meant a loss of from two to three weeks. If operators were nearer the front they would be able to look after those needing attention much more quickly and much waste of time would be eliminated. The work they are doing, he said, at the present time would be history for the dental profession.

Following Major Clayton's speech, toasts were proposed and responded to as follows: Dominion Dental Council, proposed by Dr. E. C. Jones and responded to by Dr. E. M. Doyle; Victoria Dental Society, proposed by

Dr. R. C. Bamford, and responded to by Dr. Lewis Hall; Guests, proposed by Dr. A. E. Wark, responded to by Dr. R. Ford Verrinder; B. C. Dental Association, proposed by Dr. T. W. Snipes and responded to by Dr. J. E. Black.

Dr. Black stated that about 60 were now on the membership lists of the society. The object of the organization is educational and one of its chief sources of instruction is by the university extension courses held under the auspices of the University of British Columbia.

ONTARIO DENTAL SOCIETY

Have you yet heard of the Forty-ninth Annual Convention of the Ontario Dental Society to be held in Toronto, May 8th, 9th and 10th?

Do you know that we are expecting an attendance of five hundred dentists from this province? Do you also know that you should be personally interested enough to be one of the number?

Are you satisfied with what you are doing for dentistry and what dentistry is doing for you? If not, we can give you three good reasons, at least, why you should be with us.

FIRST—*You* cannot afford to remain at home.

SECOND—*Your patients* cannot afford to have you remain at home.

THIRD—*We* cannot afford to have you remain at home.

Your committee has labored long and ceaselessly to make this the largest and most instructive Dental Convention ever held in Canada. We are providing, we believe, an intellectual and an educative feast with a menu sufficiently appetizing to lure the most exacting epicure.

Dr. Elmer Best of Minneapolis, a young impressionistic, up-to-date practitioner, favorably known throughout the continent, presents a paper on "The Treatment, Enlarging and Filling of Root Canals." This is the most important problem in dentistry to-day, and one we must master for our own peace of mind as well as for the future welfare of our patients. Dr. Best's methods are sane and practical. You will do well to hear him.

Dr. Giffen, of Detroit, is expected to give us a series of moving pictures depicting the latest methods of taking impressions. Those who have seen them are enthusiastic concerning their instructive value.

Dr. Clappison of Hamilton, an energetic believer in dental progress, will offer for your consideration a paper on that old, and ever new perplexity of dentistry, "Pyorrhea Alveolaris, its Treatment by the General Practitioner."

Dr. Frank Price of Toronto, a recognized expert on electrical therapeutics, will place before you a paper on, and demonstrate the use of, the "Ionization Method for the Treatment of Alveolar Abscesses."

There will be short talks by Dr. Paul on "The Use of Elevators in Exodontia"; Dr. Webster on "Surgical Treatment of Apical Infection and

How to Make a Diagnosis"; Dr. Harold Clark, Dr. Pearson, and Dr. Grieve on "The Cementation of Crowns, Bridges, Inlays and Orthodontia Appliances"; Dr. Webster and Dr. Box on "The Sterilization of the Office and Instruments."

The clinics will be a great factor of this year's convention. Never before have so many clinicians responded to the call. Two half days will be given over to this most important feature, in which the newest and best ideas in dentistry will be presented by men thoroughly competent to explain, and demonstrate the Hows, Whys and Wherefores.

Our efforts to secure professional attractions, have not caused your committee to neglect the Manufacturers' Exhibit which will be larger and better than ever.

The usual reduced railroad rates will be allowed from all stations in Ontario.

Surely this array of attractive inducements, together with the always-to-be-desired social pleasantness of mingling with old class-mates and the opportunity of meeting new friends, will convince you that you cannot afford to be absent, and that we are giving you of our best because we cannot afford to be without you.

W. B. AMY,

Chairman Programme Committee.

OFFICERS TORONTO DENTAL SOCIETY, 1916-17.

President, E. F. Arnold; First Vice-President, W. T. B. Amy; Second Vice-President, J. E. Rhind; Secretary, R. D. Thornton; Treasurer, T. W. Dawson; Auditors, W. E. Willmott, E. C. Abbott.

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OFFICERS OF THE BRITISH COLUMBIA DENTAL SOCIETY.

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TORONTO DENTAL SOCIETY

Treasurer's Report. Season 1915-1916.

J. E. RHIND, *Treasurer.*

RECEIPTS.	EXPENDITURES.
1915. March 22.	Essayists' expenses and
Balance from last season.. \$197.05	Hotel Carls Rite for sup-
131 Membership fees.... 655.00	pers for four meetings.. \$391.70
Visitor's Fees..... 6.00	Printing 50.00
Bank Interest..... 7.02	Postage and Typing..... 31.50
	Floral Wreath..... 25.00
	Sundry small accounts... 5.25
	\$503.45
	Cash balance in Bank.. 361.62
<u>\$865.07</u>	<u>\$865.07</u>

Audited and found correct,
(Signed,) B. F. NICHOLLS,
W. E. WILLMOTT.

April 10th, 1916.

FIRST UNIVERSITY DENTAL SCHOOL IN NEW YORK FOR COLUMBIA

Dental Course to be Allied with College of Physicians and Surgeons.

Realizing the importance of the teeth and mouth infections to systemic disease, the Faculty of the College of Physicians and Surgeons have unanimously voted in favor of the establishment of a dental department, to be connected with the medical school. A committee of prominent dentists of the city have presented plans to the Medical Faculty which have been approved.

The school of dentistry will be closely associated with the medical school, and the admission requirements will be the same as the medical. The course will be four years, the first two years the same as those in medicine, thus giving the dental student a thorough knowledge of the fundamental sciences necessary to the practice of a specialty of medicine. At the end of the second year the dental student will give all his time to the study of dental subjects, namely, operative dentistry, prosthetic dentistry, oral surgery and oral pathology, orthodontia, etc., and the more technical part of the work required for the well trained dental surgeon. This new school will be the first university dental school in New York City, and the second in the State. It will give the first four-year course of dentistry ever given in the Empire State.

CANADIAN DENTAL ASSOCIATION

The Canadian Dental Association will meet in Montreal, September 12, 13 and 14, 1916.

There has been some doubt in the minds of the members of the profession as to the advisability of holding the next meeting of the Canadian Dental Association during the continuance of the War, but after a careful canvass of all the Provinces, it was decided that the meeting should be held.

The programme is already well in hand. The Committees in Montreal have been struck and everybody is at work. It would seem as if there should be a good attendance and many very important contributions added to the subject of dentistry through the research work done under the Educational Committee of the Canadian Dental Association.

How some dentists in Ontario view school dental clinics: In a letter to a newspaper he accuses the trustees of trespassing on other people's affairs and says: "Why should the dentists' practice be attacked? The School Board would have just as much right to appoint men to collect insurance fees and do other kinds of work as to appoint a dentist. The Board acted wisely in turning the proposition down."

The Victoria, B.C., school trustees decided to allow the members of the Victoria Dental association to make a test at two schools to discover what percentage of children have defective teeth, such test to be subject to the approval of the municipal inspector and Dr. Wasson, school health officer.

The School Board of Walkerville, after much discussion on the merits of the value of dentistry to children, on the suggestion of the inspector decided to visit the Detroit school to find out what is being done for the poor children of Detroit.

The Eastern Ontario Dental Association will hold their meeting at Stanley Island, June 21, 22 and 23. L. E. Stanley, Ottawa, Secretary.

Dominion Dental Journal

EDITOR:

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3 College Street

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, APRIL 15, 1916.

No. 4.

DENTISTS AND ADVERTISING

We quote here in full an editorial which appeared in the *Ottawa Journal* on dental advertising:—

At a big dental convention in Wisconsin last week, a statement was made by one of the speakers that “ninety per cent. of the people of this country have garbage cans instead of mouths.” The phrase was vulgar, but suggestive; and we will go on to say that if 90 per cent. are as bad as that, 99 per cent. would be as bad but for the liberal advertisements which are published of tooth-powders and tooth-creams. These advertisements do a great deal of useful public service by directing attention to the desirability of keeping teeth clean if it is desired to preserve good teeth—or any kind of teeth—to a reasonable age.

But what do the dentists do to inform and interest the public about good teeth, and how to keep them? Little or nothing. It is “not professional etiquette” to advertise. The dentists know lots about teeth that nobody else does, and a heap of what they know would be eagerly learned by everybody. Alas! “professional etiquette” demands that the information

remains sacred to dental offices. A practice of liberal advertising by dentists, not necessarily of themselves but of the necessity and value of continuous good care of teeth would soon prove a big boon to humanity and incidentally it would double the business of the dentists. But this would not be "professional etiquette," so 90 per cent. of humanity can keep on with what that Wisconsin dental professor calls "garbage cans" in their faces."

In reply to the criticism of the dental profession as quoted above, we wish to say, that there is no code of ethics nor breach of professional etiquette in laying before the public every scrap of information about dentistry that is known. If the *Journal* means by advertising, material which the public will gladly read, but must be paid for by somebody, then we cannot see any good reason for the dental profession advertising, but if the *Journal* will go half way with the dental profession and publish all this useful dental information which is so desirable to the public, we feel confident that the dental profession would gladly supply the material.

There is a complete organization in every dental society from the Canadian Dental Association to the local societies as formed in such places as Ottawa, Montreal, Toronto, Belleville and smaller cities through the Dominion whose object is to give education along dental lines.

In the city of Ottawa itself there is an Oral Hygiene committee under whose auspices, there is a school dental clinic, dental literature, dental lectures and general dental information given throughout that district.

The dental educational committee of the Canadian Dental Association has sent out thousands and thousands of copies of dental information through the Dominion. The Ontario Government has printed hundreds of thousands of bulletins on dentistry and sent them throughout Ontario. These bulletins have been supplied by the Oral Hygiene Committee of Ontario and the Canadian Oral Prophylactic Association.

The Ottawa *Journal* itself, unless there was some mishap in the mails has received copies of these bulletins. There are moving pictures, lantern slide lectures on dentistry, travelling throughout the Dominion constantly, giving the public education in dentistry.

Just because the Ottawa *Journal* did not happen to be present at any of these lectures, nor read any of the literature which has been sent to their office, it must not think that professional etiquette in dentistry is opposed to public instruction. Professional etiquette in dentistry demands of its members such instruction.

In the Royal College of Dental Surgeons of Ontario there is established a chair of Preventative Dentistry, the professor of which is expected to devote much of his time in this public question, and instruct young men how to lay before the public the value of dental services to the general health.

IMPERIAL SOLIDARITY

Under this heading the *University Magazine* of February, 1916, says: "One may be an imperialist without being a 'jingo.' Other nations can hardly be expected to recognize an imperial relationship between Great Britain and her Dominions if they are treated as foreign states. At the last University celebration held in Europe before the war, the representatives of Canada were requested to fall in line with smaller countries like Norway and Sweden. With great deference they indicated that they would prefer, along with other delegates from the overseas Dominions, . . . to form part of a real imperial procession." Further on it says "this may not be a very important matter." It is important in this way. If Great Britain looks upon her Dominions as foreign states, then how can she expect either the Dominions or the foreign countries to recognize any imperial relationship? It makes the Dominions feel as if they were set apart or of no consequence. It is a well known fact to Canadians that the Imperial Government recognizes the relationship of the Dominions, but individuals and organized bodies know nothing of it.

At a notable Imperial Congress of teachers held in London a few years ago, having for its object the development of better imperial relations, a number of British educationists and politicians made addresses of welcome without giving official delegates from overseas Dominions an opportunity to respond. They were made to feel that they were being talked at about imperialism without having any part in it. Most of the speakers left the impression that they thought England was the Empire.

The dental profession has an especial reason to feel that they were apart from the Empire. At the International Dental Congress, held in Paris 1900, there was no provision for Canadian dentists to join the Congress except through the United States. At subsequent Congresses Canada was treated as a country separate from the Empire. Canadian dentists visiting the British Dental Association officially or privately find themselves in a very awkward position. They are neither foreigners nor Britishers. A foreigner could be a guest and given official courtesies as such. A Britisher resident of the British Isles could be made a member and thus have rights, but a Britisher beyond the seas has no place. He can be entertained privately, he can be told how well they think of him personally, but official recognition is impossible. He may attend all the meetings of the association open to the public, he may even be invited to sit on the platform at a public gathering, but he cannot be given the liberty of the floor nor attend any meetings where dental education, ethics or legislation are discussed. He may attend meetings where pure science is discussed. Though a British subject in the very heart of the Empire he is worse off than if he were a foreigner. Personal entertainment is not what an official representative of an overseas Dominion should get, but

instead official recognition. Who could blame German commercial circles for believing that Germany was not at war with Canada and Australia just because she was at war with England? It took weeks after the war began, to so impress German commercial circles. British educationists are far behind the law makers and the commercialists in matters of Imperialism. A wide awake member of an overseas Dominion is set to wondering whether he should pity them or be disgusted with their insularism.

Editorial Notes

Dr. Fred McIntosh, of Vankleek Hill, Ont., has been ill with pleurisy.



Dr. W. H. Steeves, Fredericton, N.B., has been appointed to the C.A.D.C. with rank of Lieutenant.



It has been reported that Lieut. H. J. MacLaurin, Winnipeg, has received a serious wrist wound in Flanders.



Dr. A. O. Hinds, of Blind River, has been appointed to the C.A.D.C. with rank of Lieutenant in No. 1 Division.



At a meeting of the Board of Education, London, Ont., it was decided to open a school dental clinic in the Aberdeen School in September.



Dr. Dolson, who has been a member of the staff of the Royal College of Dental Surgeons, Toronto, has been appointed to the C.A.D.C. with rank of Lieutenant.



A banquet was given in honor of Capt. G. C. Bonnycastle, Bowmanville, Ontario, who has been appointed to the C.A.D.C. He will be located at Halifax for the present.



Dr. F. E. Burden, Moncton, N.B., has been appointed to the C.A.D.C. with the rank of Lieutenant. His assistant, Dr. Dobson has been granted the rank of Sergeant.



Dr. Eudore Dubeau of Montreal has been re-elected as alderman by a majority of 1,500. He has also been chosen as chairman of the Civic Reception Committee.

During the closing hours of the Saskatchewan Legislature the Dental Act was amended in such a way as to permit unlicensed dentists to practise in that Province under certain conditions.



So that children in public schools in Toronto where there is not a regular dental clinic may have their teeth attended to for minor operations, a portable dental outfit has been introduced.



Dr. B. R. Gardiner has been appointed to the C.A.D.C.. Dr. Gardiner was on the dental staff of the Board of Education, Toronto, and also on the staff of the Royal College of Dental Surgeons.



In discussing the Ontario Liquor Act the Hon. Mr. Hanna said that the dentists were opposed to having a pint of whiskey in a dental office as provided in the bill. He said that the dentists believed that six ounces would be plenty.



Mr. Chas. Martin, Jr., of Ottawa, who has been for some years assisting his father in dental practice, applied to the Legislature to be given a license to practice dentistry. Owing to some technical mishap the Bill was never reported to the house.



Dr. E. D. Madden, who before going overseas practiced dentistry in Eganville, Ont., has been appointed O.C. of St. Martin's Plains hospital, England. It is one of the largest clinics overseas, having five commissioned officers and over twenty men on the staff.



The following officers and men of the Canadian Army Dental Corps have been detailed for duty in the 2nd division: Lieut. E. H. Campbell, at Welland; Lieut. J. A. Ross and Sergt. Russell Bishop, at Barrie; Sergt. K. W. Harris, at Brantford; Private W. J. Mitchell, at Hamilton.



The following officers and men of the Canadian Army Dental Corps left for overseas on Saturday, April 15th, from No. 2 Division, Toronto: Capt. W. H. Trelford, Capt. J. H. Duff, Capt. D. J. Bagshaw, Sergt. Jamieson, Sergt. Godfrey, Sergt. Russell, Pte. Ruddell, Pte. Greenwood, Pte. Donnolly.



Dr. Guy G. Hume, who set out to join the Toronto University hospital dental corps at Salonica some three months ago, has been detained in England for want of proper authority to send him on. Authority not being forthcoming he has been appointed dental surgeon to the Ontario hospital at Orpington.

Miscellaneous

CANADIAN EXPEDITIONARY FORCE—ESTABLISHMENT—CANADIAN ARMY DENTAL CORPS—AMENDMENTS

With reference to Militia Order 257, 1915, the following amendments are authorized:—

	Officers.	W.O's.	Q.M.S.'s.	Orderlies.	Batmen.	Total Personnel.	Horses
Headquarters Staff.							AA
D.D.D.S.	1	...	...	1	1	3	1
Adjutant	1	...	...	...	1	2	1
Research Officer	1	...	...	...	1	2	1
Dental Officers at Headquarters, London	2	...	...	2	2	6	...
Quartermasters	1	...	...	...	1	2	1
Assistant Quartermasters	1	...	...	...	1	2	1
Sergeant-Major ....	...	1	...	...	...	1	...
Quartermaster-Sergeant ....	...	...	1	...	...	1	...
Assistant Quartermaster-Sergeant ....	...	...	1	...	...	1	...
Clerks ....	...	...	...	3	...	3	...
Total	7	1	2	6	7	23	5
At Corps Headquarters.							
Each Infantry Bge. ....4 Dental Surgeons (3)	12	...	...	12	12	36	...
Total	7	1	2	6	7	23	5
At Corps Headquarters.							
For Services Corps troops...2 Dental Surgeons....	2	...	...	2	2	6	2
Total	2	...	...	2	2	6	2
A.D.D.S.	1	...	...	1	1	3	1
O.A.D.D.S.	1	...	...	1	1	3	1
Each Infantry Bge. ....4 Dental Surgeons (3)	12	...	...	12	12	36	...
" Artillery Bge. and A.C.1 Dental Surgeon (1)	4	...	...	4	4	12	4
" Field Ambulance ...1 Dental Surgeon (3)	3	...	...	3	3	9	4
" Stationary Hospital...1 Dental Surgeon (2)	2	...	...	2	2	6	...
" General Hospital ...2 Dental Surgeons (2)	4	...	...	4	4	12	...
" Base Stores ....1 Dental Surgeon....	1	...	...	1	1	3	...
" Advance Stores ....1 Dental Surgeon....	1	...	...	1	1	3	...
" Cas. Cfg. Station...1 Dental Surgeon....	1	...	...	1	1	3	...
For remaining units of							4
Division ....2 Dental Surgeons....	2	...	...	2	2	6	...
Total	32	...	...	32	32	96	10

RANK OF OFFICERS OF CANADIAN ARMY DENTAL CORPS (OVERSEAS).

The Deputy Director General Dental Services to be Lt.-Colonel.

Senior officer with each Division—Lt.-Colonel and one Major.

Research Officer to have rank of Major.

Remainder of overseas, officers, other than Honorary rank, to have rank and pay of Captain.

Orderlies to be Mechanical Dentists, and to have rank of Sergeant.

Batmen to be Privates.

Note—The figures in parenthesis denote the number of Brigades, etc., etc., to a Division.

CANADIAN ARMY DENTAL CORPS (HOME SERVICE)

	Officers.	Orderlies.	Batmen.	Personnel.	Horses.
D.G.D.S. and Assistant. Headq'trs, Ottawa	2	2	1	5	....
1st Division	8	8	8	24	1
2nd "	14	14	14	42	1
3rd "	12	12	12	36	1
4th "	8	8	8	24	1
5th "	4	4	4	12	1
6th "	14	14	14	42	1
No. 10 Military District	16	16	16	48	1
No. 11 "	12	12	12	36	1
No. 13 "	12	12	12	36	1
One Quartermaster for each Division and District	9	9	....	18	....
Total	111	111	101	323	9

DENTAL OPERATIONS PERFORMED BY OFFICERS OF THE CANADIAN ARMY DENTAL CORPS IN ENGLAND AND OVERSEAS, JULY 15 TO DECEMBER 31, 1915

Month.	Fillgs.	Treats.	Dents.	Prophys.	Ext.	Devit.	Total.
July (a) 15 officers.	1,856	576	119	113	1,370	478	4,512
August 31 officers.	5,875	767	509	604	4,613	988	13,356
September 38 officers.	7,150	1,507	845	1,154	6,069	1,020	17,745
October 42 officers.	9,890	1,903	1,250	1,040	6,695	1,199	21,977
November 42 officers.	10,759	2,621	1,351	1,066	6,995	1,546	24,338
December (b).. 38 officers.	8,837	1,935	1,287	728	5,336	1,423	19,546
Totals	44,367	9,309	5,361	4,705	31,078	6,654	101,474

(a) Dental clinics were not opened until the 15th July, with twelve outfits, and eight more were received on the 22nd July, which gives an average of fifteen officers for the latter half of July.

(b) Reports have not yet been received from four officers.

Note.—The total number of operations is 101,474; the average number of dental officers for the five and one-half months is 37; the average number of operations performed each month by each officer is approximately 525.

On September 4th, 1915, the seven dental outfits used by the officers of the 4th, 5th and 6th Infantry Brigades, and the 4th Brigade, C.F.A.,

were delivered to Headquarters, 2nd Canadian Division, for shipment overseas. They were not returned to the dental officers until September 27th. The only dental operations performed during this period by these officers were extractions and treatments.

J. ALEX. ARMSTRONG, Lieut.-Colonel,
Director of Dental Services, Canadian Contingents.

ADDITIONAL SUBSCRIPTIONS TO THE CANADIAN ARMY DENTAL FUND.

Dr. J. C. Leonard, St. John, N.B., \$10.00; Dr. A. L. McAvenny, \$5.00; Dr. J. L. Day, \$5.00; Dr. S. Sawaya, \$5.00; Dr. L. A. Langstroth, \$1.00.

FOR SALE—Established Dental Practice, and first-class equipment in thriving Western town. No competition. Address Box 102, Dominion Dental Journal, Toronto.

Dominion Dental Journal

VOL. XXVIII.

TORONTO, MAY 15, 1916.

No. 5.

Original Communications

PRESIDENT'S ADDRESS

MARK G. McELHINNEY, D.D.S., L.D.S., Ottawa, Ont.

Read before Ontario Dental Society, May 8th, 9th and 10th, 1916, Toronto, Ont.



In opening this forty-ninth annual meeting of the Ontario Dental Society, which is taking place in one of the most eventful years of the world's history, I bid you welcome, and trust that the fruits of this meeting will be so signally valuable to our profession and to the public that we shall remember it as the war-year meeting.

It was not without some feelings of surprise that I found myself called upon to occupy this chair, an honor which I consider the highest in the gift of the profession in this country.

In the light of my unfitness I accept it with humility, but in accordance with your generous

intentions I cannot but feel pride in its attainment. My feelings are quite different from those of the egotistical puppy. Two dogs were passing a city lot where a steam excavator and a gang of men were preparing for building operations. Said one, "What is all this fuss that the men folks are making?" "I know," replied the other, "they are digging for the bone that I buried last week."

That my election coincided with the completion of my twenty-fifth year in practice savors of the timeworn romance of the good little boy who through doubtings and difficulties maintains his ideals and ultimately

achieves success. He then becomes eligible as a model upon which other good little boys may pattern their lives.

While this chair is certainly a worthy ambition, I am convinced that there are other and perhaps better roads than the one by which I came, and I hereby absolve him from any obligation to imitate me, and myself from any responsibility as a model.

I believe that each one must work out his own salvation, not in fear and trembling, but in the courage of his own thought and action, trusting in the ultimate good, seeking the highest truth, and relying on his reason in the choice of a method.

The good little boy starts out in life with much to learn and much to unlearn, and if the passing years reveal no old errors cast out and no new light attained, his life has been of small value to himself or others.

Those great names in history to whom we owe our liberties and our progress frequently clashed with conventional errors, and mayhap spoke ill of the gods of their times. They, citizens of all the ages, had a wider vision, saw humanity as a whole, and scorned the chains forged by fear, ignorance and greed in each brief, unthinking generation. These are the men for our emulation, and not the smug-faced conventionalists for whom a few traditions, much prejudice and the present hold all there is in history and in truth.

If I have any message, particularly for the younger men, it is this: Cast out fear, whether it be social, economic or spiritual; take your souls into your own keeping, do your own thinking, seek the best, get a reason for living. Then, if you have widened human liberty by ever so little, furthered human progress by one small step, lessened human suffering, or augmented human joy by one pang less, or one thrill more, you will have done well.

While millions of human bodies and minds suffer from injustice, privation and ignorance, what right have we to look to the future? Our business is to make this world fit to live in here and now. For some seven thousand years of human history the world has been a shambles through greed, pride and superstition, and we must be rid of these, no matter by what nice, modern names we call them, or the millions dying in Europe will have died in vain.

Said Tennyson:

“The Lord let the house of a brute to the soul of a man,
And the man said, ‘Am I your debtor?’
And the Lord, ‘Not yet, but make it clean as you can,
And then I shall let you a better.’ ”

I am no pessimist; it is only that in the contemplation of the greater vision that the present seems so inadequate. One must not forget that humanity has come far and that the world is growing better.

In the great Empire of which we are fortunate and loyal citizens there

is the spirit of liberty, of brotherhood and of democracy, sometimes misinterpreted but never lost, and on this do we build our hopes of better things.

We meet here not only as dentists, but as men, as British citizens keenly concerned regarding our responsibilities, our necessities and our opportunities. We meet here not only to consider matters pertaining to our profession, but to cherish and promulgate the wider view, the fuller life and the higher humanity.

It may be that after the tremendous turmoil is hushed and the mad ambition of world-conquest curbed and tamed, we shall see the birth of a new order of things, and in that new order we must be prepared to take our apportioned place.

We, the dentists of Canada, small in numbers but great in spirit, modest in possession but rich in opportunities, must place our profession in the vanguard of human service, and thus prove the full warrant for our existence. In such we attempt great things.

It is told of Mr. McClure, of magazine fame, that once, when the burden of multitudinous undertakings made it appear as if failure were imminent, he told Professor Drummond that he had a mind to throw the whole thing up. Professor Drummond replied that "The man who undertook more than he could accomplish always accomplished more than he otherwise would."

It appears to me that a man should live as if he intended to live for ever, find expression for his every talent and attempt the achievement of his highest and farthest ideal; then, whether his life be short or long, he will have done his best, which is all that can be required of anyone.

While I would not wish to pose as an apologist for the philosophy of Friedrich Neitzche, especially in its Prussian application, it would appear that he has uncovered some valuable truth, amongst which is, that a man may, by the Will to Power, make of himself that which he wishes to be.

My objection to Neitzche is that he excludes all operation of moral law. I am convinced that there is in Nature the genesis of a moral law, and that our ethical and religious gropings are part and parcel of its evolution, and that the coming superman will be one with abundant Will to Power, subject only to a high ethical concept.

Thoreau, the Sage of Concord, in his delightful book, "Walden," says that he is the worst man with whom he is acquainted.

Honest self-analysis will bring a like conclusion to most. Is it not an endeavor of merit to try to make of this worst man a better one. Sometimes I fear that much of our goodness is like little Ethel's.

Little Ethel used to play a good deal in Sunday school, but one day she had been so good that the teacher said in praise: "Ethel, my dear, you have been a very good girl to-day." "Yeth'm," responded Ethel, "I couldn't help it; I dot a stiff neck."

In 1890 the Royal College of Dental Surgeons of Ontario, by virtue of certain powers considerably invested therein by the Legislature of the Province, let loose upon the trusting public a brood of new-fledged dentists. I was one of that brood.

In comparison with the pretentious attainments of to-day, the School of Dentistry was a modest affair, but the spirit was there, the germ of the present development.

The teaching staff was small but earnest, and under the great and kindly leadership of the late Dean Willmott was implanted that spirit which has brought about the present noble fruition.

We were taught that dentistry was not only a means of livelihood, not only a stepping-stone to personal success and possible affluence, but a sacred trust for the betterment of ourselves, our profession and the community in which we lived and worked. That this teaching has borne fruit is evident in the results and in that the profession of dentistry holds no more earnest, self-sacrificing and heroic figure than the late Dean Willmott.

We hear much of self-made men, but it is doubtful if there are many such. Ability, pluck and perseverance count for much, but the friendly offices of others contribute greatly to success. For my own small measure of success I can claim little credit. Nature gave me good health, moderate ability, some thirst for knowledge and a hatred of idleness. Good fortune gave me an ideal preceptor in the late Dr. John Robertson, and later a long association with Dr. Alexander Martin, a man of uncommon skill and high repute, who treated me like a son. With so many good friends, both in and out of the profession, it would have been base ingratitude to have failed utterly. To all of these on this occasion do I render heartfelt thanks.

The past twenty-five years have shown much progress in our profession. They have transformed our office arrangements, and in many ways changed our methods of practice. They have given us electricity with its numerous appliances. They have given us a scientific basis for our treatments. They have widened our application of anæsthetics. They have given us a new orthodontia, which conserves instead of destroying. They have given us a wider view of the economy of human life and the recognition of our place in the community.

The passing of the indenture system was a great step forward. The oral hygiene movement in its many-sided development has immeasurably benefited the people and ourselves, and has much farther to go.

The Army Dental Corps in its present establishment is not only a triumph for the profession, an incalculable benefit to our troops, and a new outlet for our activities, but is also a high tribute to the sagacity of our Minister of Militia, who in this and other instances has proven his courage in the adoption of modern methods, in spite of traditions, petty jealousies,

red tape and other mean influences to which smaller men are often too subservient.

In the prosecution of any great work, heed must be given to the selection of men, and I think that we agree that in Lieut.-Col. J. Alex. Armstrong and Majors Smith, Gibson and Clayton we have officers worthy of the cause. In Major Clayton we have not only a man of action, but a man of eloquence such, that after hearing one of his patriotic addresses, the only decent thing seems to be immediate enlistment.

The general status of dental ethics seems to be satisfactory, except that it may be somewhat hampered by traditions borrowed from older professions, and which bear hardly on modern conditions. We should be less concerned with the letter than with the spirit of our ethics. There are two sides to professional life, the one ethical, the other commercial. While we may not always see eye to eye with Brother Bill in his excellent letters, we must admit that the commercial side is eminently practical and necessary.

I am glad that lectures on the economic side are given at our college. It is poor policy to turn out young men splendidly equipped to practice a profession and totally unable to turn their knowledge to commercial account. I was sadly handicapped in this direction, and wish to see other young men started without this handicap. Our ethics should permit some positive form of introduction to the public. The extent of this ethical elasticity might well form a subject for your consideration.

In the matter of the use of anæsthesia a word of warning may not be out of place. Anæsthesia has a large place in dentistry, and every effort should be made to avoid pain and discomfort, but in most operations nothing can take the place of skill and efficient instruments. To apply anæsthesia, or near anæsthesia, to comparatively trivial operations, will not, in the long run, commend the public to dental care. Other things being equal, the less cumbersome the operation the more will the method commend itself to the patient. The use of the gum-lancet has, I believe, passed. Why two operations when one is sufficient? The driving of crown-bands below the gum-margin is another cruelty as unnecessary as some of the gold-filling exploits of the past.

It is sometimes remarked that Doctor Blank is a good dentist, but awfully rough. Such is a mistake. Doctor Blank lacks being a good dentist by the amount of unnecessary pain that he causes. He may be an effective mechanic, but a good dentist is more than a mechanic. To the skill of the mechanic must be added the technique of the artist and the sympathetic consideration of the gentleman.

I would like to refer to our recognition as one of the learned professions, a matter which has concerned us deeply at times. Not infrequently has our pride been injured, and we have been sore.

As the popular advertisement says: "There is a reason," and it is

not far to seek. The recognition of a learned profession does not rest so much upon professional skill as upon a certain breadth of culture which lies beyond.

Professional training fits a man as a student, but if he stops there he will never be equipped as a member of a learned profession.

The older professions, having had more time, have set a high standard of culture. Their extra-professional contributions to science, art, literature, economics, philosophy and other intellectual activities have won for them a recognition which is reflected on each individual member.

Dentistry was for a long time isolated. Its members rarely ventured beyond the confines of professional necessity. A few possessed the wider vision, but the most were blind and dumb. Later, our profession has been finding itself; we are discovering our opportunities and responsibilities, and are accepting the call to a wider usefulness. The intellectual limits of the corner grocery and the village sport have been passed, and we have the vision of a cultured citizenship. To the young men I would say: Read widely and wisely, study steadily and with some end in view. Take up some outside branches of knowledge and follow them up.

All knowledge is co-related, and the result will be a corresponding widening of intellectual grasp in many directions. I would not detract from the value of rest, recreation, sport and good-fellowship, for they are good. These will not be injured, but rather enhanced by a broad mental outlook.

Man is made richer by what he gives. When our profession has paid the price in service and won its place in culture; when it has approached the standards of the older professions, it will acquire full recognition as a learned profession, and not sooner.

Under the circumstances it is scarcely possible to avoid frequent reference to the great world war. Many causes and conditions have been cited as responsible, and many great problems are held to be in process of settlement. It appears to me that after the basic problem of national survival is assured, it resolves itself into a test between two great policies in government: democracy and individual liberty on the one hand, and military State-socialism on the other. Whether the citizen or the State shall be supreme; whether the true object of civilization is to produce a free, individual and happy citizenship of moderate efficiency with a system of government subservient to this ideal or a perfect system of beehive government, in which efficiency is the only object and the individual but a helpless slave in its attainment.

I take it that we are agreed that the sublime spirit of the British Empire is that of individual liberty toward which government is a means and not an end, and that we are prepared to defend this ideal to the last ditch.

When certain misguided ones, happily but few, contend that this is not our war as Canadians, I know that I am as British as if I trod the

heather of the Scottish Highlands, whence my ancestors came two centuries ago, and that not time nor space nor circumstance can rob me of my British blood. What is Canada's place in the Empire? Wherever she is most needed: there will she be found side by side with the brothers of the blood. They are making a dear bargain who, for a little cheap notoriety, a few mock heroics and the sorry halo of a safe martyrdom are willing to win a stigma of shame, a bar sinister on their progeny for generations. I would not leave to my children such an inheritance for the price of a throne. Fortunately, there are many of my opinion, as was a certain Irishman.

Passing through a military hospital, a distinguished visitor noticed a private in one of the Irish regiments who had been terribly injured. To the orderly the visitor said:

"That's a bad case; what are you going to do with him?"

"He's going back," replied the orderly.

"Going back," said the visitor in surprise.

"Yes," said the orderly. "He thinks he knows who done it."

In conclusion, I desire to thank you for your kindly forbearance. I know that in opinions I may differ from many of you, and if I have spoken too strongly, or transgressed anyone's dearest convictions, forgiveness is asked. Truth, like a mountain, is many-sided, and we do not all get the same aspect. Each one of us may be right from his point of view. There are some vital points, however, in which we are in accord. We agree in the conservation of our profession to human service, in the ultimate triumph of right and our loyalty to that flag which is the symbol of all that is the truest and the best in humanity.

DISCUSSION.

DR. W. C. DAVY (Morrisburg): Mr. Chairman and Gentlemen: It was only just before leaving the city on Saturday that I received the president's address, and as I was out of the city to pay a visit to some relations I had not seen for twenty-one years, it is needless to say I did not have a minute to spare. It was only while coming in on the train I had a chance to read it over. I am glad, however, to have the privilege of saying a few words in discussion of this worthy paper which the president has given us. He has touched on economy here and on sociology there, and on ethics, and even got into morality and religion. All these subjects are near and dear to the heart of Dr. McElhinney, and considerable of his spare time is used in reading and writing along these lines. While he might not at all times be considered orthodox, still his views are good along many lines, especially if they tend towards discussion and thought. Those of us who have talked with Dr. McElhinney on these subjects know that he has been very moderate in the assertions he has made in this paper, and it would only take a word or two of criticism on my part to start the doctor on a lecture

of an hour or two on some of these subjects. One of the subjects to which he has drawn our attention is that of service in different lines, and service, as I consider it, means to another, and not to ourselves. A man who gets down to the fine point where he studies the field of service which is open to him and then studies his own abilities and talents to fulfil that service, and then seeks to apply that, has rendered a service of which he need have no doubt when it comes time for him to lay down the gavel or place aside the sceptre but what he has fulfilled his place in this world. A man is like a piece of rough marble intended for a certain structure; he has to be hewn to shape and polished and fitted into place, so he may not only be a support, but an ornament to the structure to which he belongs. Every man has his little niche to fill in the human edifice. The trouble is, too many of us do not measure up to the size of the space we are supposed to fill, and there are a whole lot of cracks around us, and then we are not properly cemented into the whole structure, and we lose our place in it.

The president has mentioned the acknowledgement of the position of the dental profession. I think the essential in this is that when our men in the dental profession become educated men then we will be recognized to a greater extent. Education is looked upon by some as being book learning, but some of the most educated men I have met have been men with very little book learning and very little schooling, and some of the least educated men have been men with the greatest amount of book learning. An educated man is one who has acquired knowledge, assimilated that knowledge and applied that knowledge, just like any food taken into the body, it has to be acquired first and then assimilated, and after it has been assimilated the energy received from it has to be applied. It is the same way with knowledge. It has to be assimilated into the individual before it can be made use of, and when it has been assimilated then it has to be applied in order to show a man up as being educated. A number of our men have acquired a considerable amount of knowledge. They have the knowledge, but that does not make them educated. In the first place, they have to assimilate that and then apply it, and the sooner our profession become broadminded and capable the sooner will we come to the position which as a dental profession we should attain. Many of our men to-day are taking prominent positions in educational and civic work in our towns and cities.

There is one matter on which I think action should be taken by this body in connection with the Army Dental Corps. Those of us who have not joined the Army Dental Corps may be of considerable service to that body even though not being actual members. There are conditions in the Army Dental Corps which, if I have been properly informed, are not as satisfactory as they might be. We have a number of our men, especially the newer graduates, who have enlisted for overseas service who will only receive the rank of sergeant. The Board of Directors of the college has appointed a representative, and it was hoped that a representative or committee from

this body would be appointed, and also one from the Canadian Dental Association, to assist the members of the Army Dental Corps that might be in their power. A military organization oftentimes has difficulty in accomplishing things within itself, and it was thought that we as representative bodies of the educational institutions of this Province and the Dental Society of this Province, and the dental organ of the Dominion, would probably have considerable influence along certain lines. I think it would be well if at this meeting a committee should be appointed with power to act in conjunction with these other committees.

Then some of the newer phases of dentistry were mentioned, some commended and some slightly criticized. Dentistry has been passing through such rapid changes of development that a great many members of the profession scarcely know where they are at. One day there appears some panacea for one thing, and another day we hear of an operation which is going to be the most successful that can be performed in any line. Another day a medicine is recommended to us which has solved all the mystery along another line in dentistry. These come like a flash, and they are received open-mindedly, and perhaps in a few days they are dropped with our fingers burned. Perhaps it is well that these things are taken up so enthusiastically, because we find out in a hurry of what benefit or otherwise they are. Otherwise it might go on through months and years before we finally find out where the failure is. It is a good thing to have enthusiasts to develop these newer ideas. The quicker they are developed the more quickly we find out whether they are of essential value, or whether they should be cast aside.

Now, just in closing, the president has referred to this present catastrophe, this world war, and while it is a regrettable thing, we are satisfied one and all that the principles which have actuated Old England and received such prompt endorsement and support from all her colonies, and also by her allies, will not suffer any longer that German oppression and tyranny shall dominate this world, crushing the smaller nations and over-riding all the rules and rights of humanity, and we believe the cruelties and atrocities of the German Empire must disappear once and for all. The idol of German militarism, with its clay feet, must be thrown down; that idol sculptured by the Hohenzollerns, with that demoniac Kaiser Wilhelm as the chief designer, must under the banner of truth, of justice and humanity be thrown down, never to rise again. (Applause.)

DR. SNELL: I realize that the president's address is probably a little more difficult to discuss than another paper. It is now open for general discussion.

DR. CROSS: I just jotted down one very striking sentence in Dr. McElhinney's address. I wrote it down lest I should digress, because if I were discussing Dr. McElhinney's paper I would have hard work to disassociate the paper from the doctor. He is the most interesting man of my acquaint-

ance. I lived next door to him for some years, and I could entertain you with stories of his mental and manual dexterity and activity by the hour, but I am not here for that purpose. The sentence which I have written down is: "When our profession has paid the price in service and won its place in culture, when it has approached the standards of the older professions, it will acquire full recognition as a learned profession, and not sooner." If anything has made me tired in conventions and in dental gatherings and reading dental literature in the past, it is this old time-worn subject; this talk of recognition of our profession. We will never be recognized by talking that way. That is only the emanation, to my mind, of small minds.

That is one of the great reasons why the early history of Canada was so retarded. If you read the chronicles of Canada, the old French rule in Canada, you will find it was a continual strife for recognition between the bishop and the governor, from France to Canada, and back to France again; a waste of energy and no progress. When we have a few men like Dr. Black, and a few others I have in mind, not forgetting our friend, Dr. McElhinney, there will be recognition automatically as a learned profession, and not till then—when we have paid the price in service; and that reminds me, on some lines I think a change would be justified. He says you who listen with credulity to the whisperings of fancy, who pursue with activity the phantoms of hope, who expect age to fulfil the promise of youth, and that the deficiencies of to-day will be supplied by the morrow—he says attend to the history of Rasselis. In other words, you cannot have unless you act. Utopia won't be dragged in by the teeth or the ears, and you cannot drive him over a ruined bridge, but you may ride him under a triumphal arch. Another good bit of advice he threw out to you was to cast away fear. You know fear is one of the greatest detriments to our civilization; the fear of this and that, the fear of what this person will say and that person will say. Certainly we must conform to certain conventionalities of life, but fear seems to worry us. I know it worried me for a long time. One thing I was frightened of was the devil. I thought he would get me. I am not a bit afraid of his satanic majesty now. I think if anything to-day the fear is on his side. Fear is a tremendous drawback, and we should throw it out. I am speaking this seriously—we should eliminate fear.

There are many things in this address that will only appear to you when you read it. It is full of good advice. Dr. McElhinney is a very modest man when he speaks of himself. He has a hatred of idleness. I wish I had the hatred of idleness that he has. It is worth the price of admission to see him go into action when an automobile stalls, for instance. He has had automobiles and automobiles. He seems to be the pioneer in the invention of all these things, although he has one now that someone else made. I am sure he hates to ride it, because he has made all these himself. The first motor cycle I saw with a side attachment Dr. McElhinney made. I

think he had the axle too long, and the lady used to circle around him instead of him around the lady. I suppose it was the smaller body revolving around the larger one. He says his automobile is a small one, and uses so little gasoline it can feed off the smell of a bigger one ahead of it. I used to go in at nights to see him in his back shop. If Dickens had ever seen it he would have burned the "Old Curiosity Shop" and written another one. I haven't time to attempt to describe it, but I used to go in there when I was feeling blue.

I could entertain you for a week talking of the wonderful things Dr. McElhinney has done. As I said before, he is one of the most interesting, one of the most versatile, and one of the best fellows I have ever met. I want to congratulate the society for electing him president. In the past we have elected many men; I won't say undeserving men, but they were not picked out with the care that might have been exercised. I know men come to our conventions and use the convention until they get in the chair, but never contribute anything to the sum total of dental knowledge. They graduate from the office and become ex-presidents, and that is all there is to it. Not so with Dr. McElhinney. Since he has been in the profession he has contributed to dental literature and dental mechanism of all kinds.

DR. MCELHINNEY: Gentlemen, there is not very much that I have to say. I had intended to perhaps make my paper a little wider, but I was afraid of making it too long. My idea is this: We should be careful that the profession should not become an exploiting ground altogether for the commercial interests. I think I can say that the dental men know that I have no grudge against any commercial interest, but I think in the exploitation of new methods and new machinery—I am very fond of machinery, as you have heard—we should remember that the dental profession is the dog, and that the commercial interest is the tail, and we should not allow the tail to wag the dog. I do not like to have a man representing some appliance come in and tell me what is the best for me to use as a professional man. Of course, I am considerable of an egotist, you know; I know pretty nearly everything; but I don't think always that the other man knows the rest, and it may be that I can guess a little at the rest. I think that is our position as a profession. Of course, we know we don't know everything, but still when it comes to saying what we shall use, what appliances, and what methods we shall employ, I think we are the final arbiters of that, and we should not be made merely a ground on which to exploit inventions and methods. Of course, I thank you for your kind expressions.

If there is anything in my address which will be useful I hope you will make use of it, or if not throw it aside; there will be others to write addresses after I am dead.

In closing, I would like to refer to the death of Dr. Gowan, of Peterboro', who was a personal friend of mine. For some reason I did not know of his death until quite recently.

THE NECESSITY FOR MAKING A DIAGNOSIS IN DENTAL PRACTICE

A. E. WEBSTER, D.D.S., L.D.S., M.D., Toronto, Ont.

Read before Ontario Dental Society, May 8th, 9th and 10th, 1916, Toronto, Ont.

As our knowledge of anatomy, chemistry, physiology, physics, biology, bacteriology and pathology increases, the necessity of making an accurate diagnosis before proceeding to treatment becomes more and more apparent. The first question a layman, and sometimes a physician, asks the dental student is, "What is good for toothache?" To the uneducated in dentistry, this is a proper and vital question which a dental student of one or two years' standing should be able to answer at once. To the well-informed dentist there is no correct answer possible, because he knows that all toothaches are not brought about by the same cause, nor can they be treated by the same remedy. The whole aspect of the practice of dentistry has changed within the past few years. To-day a dentist is supposed to be educated and be capable of determining what is in the best interest of his patients.

There are a number of dentists present who can remember the time when patients made their own diagnosis and applied to the dentist to have the treatment carried out. Twenty years ago it was not an uncommon thing for patients to decide, because their teeth were not as regular as they so desired, to have them removed and an artificial denture made. Patients regularly applied directing that this or that tooth was paining, and it should be removed, or because one tooth was paining they should all be removed. In many of these cases the dentist removed all the teeth because he was so directed, and placed before the patient several hundred sets of teeth and asked him to select the kind of teeth he wanted. The result of such dental practice was the removal of hundreds of good teeth and their replacement by small white teeth, all set in a row, so as to make them gleam like tombstones. Gradually the profession drew away from taking dictation along these lines; but later fell into the trap of being directed where to put crowns and bridges, with no better result to the patient or the profession than in the former cases. This question of taking dictation from those outside the dental profession has arisen in a new form within the last year or two. The family physician and the over-enthusiastic specialist in vaccines and emetin directs the dentists to extract a patient's tooth whether it is in accordance with his own judgment or not. It makes very little difference so far as the patient is concerned whether he loses good sound teeth upon his own diagnosis or that of a physician. It would seem that just as soon as the dentists had been able to educate the public to ask his opinion as to what teeth should be extracted and where crowns and bridges should be placed

and what kind of fillings should be inserted, along comes the physician to tell the dentist what treatment should be carried out.

In most practices patients are received and dental operations performed without making a comprehensive study of all the conditions present. In the same mouth we have seen beautifully contoured gold inlays placed in the mesial surface of a molar and a cement filling in the distal, or perhaps a well made porcelain inlay on one surface of a tooth and a copper-amalgam on the other, or what is infinitely worse, a well made and well fitted piece of bridge work on one side of the mouth, while on the other the teeth are being lost and the patient's health endangered because of a pyorrhea infection, or a good gold filling malleted into teeth which have septic infection at the apex. Why should dentists who are capable of doing such splendid operations as these not have a proper appreciation of their relative value to the patient? It would be far better for the patient to have no crowns or bridges than one alveolar abscess.

Dentistry can never take its proper place before the public until its members have a thorough training in the scientific branches underlying its practice and a sufficient clinical experience based upon these principles.

One unfortunate thing in this connection is the lack of training in diagnosis given the dental student. The whole manner of conducting a dental college clinic makes it difficult to teach a student the importance of a correct diagnosis in every case treated. The general plan of receiving patients is to have an examiner see all the patients and mark upon a chart what operations and treatments are to be carried out. The student receives the patient and the chart, and does what is indicated on the chart. The student may never ask or know why gold fillings are inserted in one case and silicates in another. It is true that patients may be received suffering from pain or show lesions of the soft parts which are carefully examined before treatment is undertaken. The unfortunate thing is that dentists treat dental caries without any thought of its cause, but would investigate carefully the cause of a pain before attempting a treatment. To treat dental caries without a diagnosis is no more successful than to treat a pain or lesion of the mouth without a diagnosis. We need no more evidence on this subject than the number of our fillings which fail to cure or prevent caries.

Orthodontists have long since seen the necessity of making a diagnosis before beginning treatment. They get the family history, the personal history of the patient, the dental history, the habits, the character, etc. They make measurements, X-rays, models, study anchorage lines of force, resistance of tissues, etc. Having made a diagnosis they begin. Contrast this with what the operative dentist does. The patient applies to him to have a filling inserted, perhaps stating the kind. Within three minutes of seeing the patient, treatment is begun, and perhaps within a half hour more a large proximal cavity is filled with amalgam. This is all done without any reference to why the tooth decayed, or why a certain cavity formation

is followed, or why amalgam is used, or the state of the rest of the teeth in the mouth. There has not been time for studying the occlusion, the contacts, contour, or the irritability of the tissues, or the state of the pulp of the tooth filled. We belittle operative dentistry when such important operations are made without a diagnosis.

What does the average crown and bridge operator do when he sees a space between two teeth in the same jaw? Within an hour from first seeing the patient two vital teeth may be cut all to pieces and the pulps removed and on the royal road to gingivitis, pyorrhea and general septic infection. Would it not be worth while to get the history of such cases, make models and study them before the teeth are much ground or the pulps destroyed? There are so many ways of replacing lost teeth nowadays that surely the best method cannot be chosen in a minute.

The dental therapist is no better when it comes to diagnosing apical infections. He may or may not know whether the pulp is alive or dead or the state of the tissues at the apex. I have known apical infections to have been treated for two years without having been opened all the way up the canal. No diagnosis was attempted. Somebody told the dentist that oil of cassia was good for teeth which became sore when the canals were sealed with a filling; so he blunders ahead, changing his dressing every day or so.

Physicians often treat patients for months for pain about the mouth and head without a diagnosis, but a dentist who does this ought to have help and the physician put in his correct sphere.

Both dentists and physicians are prescribing drugs for the cure of pyorrhea without having made even an ordinary examination upon which a diagnosis might be based.

To make a diagnosis it is necessary to have a fair knowledge of the normal, both anatomical and physiological. A study must be made of the clinical history, pathology and symptoms of each disease, besides a knowledge of the instruments and methods of diagnosis.

Let me say in closing, that dentistry has come to the place where it cannot be successfully practised with only a knowledge of technical procedures, as is found in books on operative dentistry, crown and bridge work and orthodontia. Let me earnestly suggest a careful reading of Osler's book on "General Medicine," a good work on "General Surgery," besides Brophy's, Gilmer's or Blair's work on "Oral Surgery," Black's book on "Special Oral Pathology" ought to be in every dentist's library. Dentists, as our president has suggested, must read widely, not merely to become educated, but to keep up with present knowledge.

IONIZATION METHOD OF TREATING ALVEOLAR ABSCESS

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Read before the Ontario Dental Society, May, 1916.

It would be interesting to review this subject historically, but our time will not permit.

We are accustomed to think of compound matter as being made up of molecules and molecules as being divisible into atoms, the atoms representing the simple elements. We may further think of atoms as being made up of electrons both positive and negative which may be positive and negative charges of electricity. We may think of one combination of electrons as forming an atom of one element, say oxygen and another combination of positive and negative electrons as forming another kind of atom, say of hydrogen. We do find that the atoms of all the different elements have a different electrical potential relation to one another, for example, in the relation of oxygen and hydrogen to each other hydrogen is positive and oxygen is negative. This may be due to the proportions of positive and negative electrons in their atoms. And it may be in the attraction of the positive hydrogen to the negative oxygen that the chemical union takes place to form the H_2O in the molecule of water or the H_2O_2 in the molecule of hydrogen dioxide. Let us for a moment keep in mind this attraction of the hydrogen and oxygen atoms to form molecules of water.

We may recall that any appliance, battery or dynamo for producing electricity has two leading out wires of opposite electric polarity, one positive and the other negative. Suppose these positive and negative wires from a battery both dip into a vessel of water allowing the water to make a connection between the two. We find there is a stronger attraction between the positive hydrogen and the negative wire electrode and between the negative oxygen and the positive wire electrode than between the positive hydrogen and the negative oxygen, and consequently the hydrogen and oxygen will part company, the hydrogen will rush to the negative electrode and the oxygen to the positive electrode. We have introduced the word electrode, which should not need further explanation. The hydrogen and oxygen radicals are called ions, the water is an electrolyte, the process electrolysis, or electrical analysis. We may ionize most substances through which we may pass an electric current. The substance must first be liquified either by heat or by solution in a fluid that will allow electricity to pass through it. Water is the common solvent, ether, alcohol, oils and so on are not conductors of electricity.

We may place the two electrodes in contact with the human body in two places and pass a current through the body that will ionize the fluids in the body. Or we may place say a solution of potassium iodide against

the body under the negative electrode and the iodine will leave the solution and endeavor to pass through the body to the positive electrode. We may put a solution of K. I. in a root canal and with the negative wire electrode in the canal and the positive large electrode properly applied elsewhere a current of 2 or 3 milliamperes will soon cause the iodine to leave the solution in the root canal and dissipate in the tissues. A litmus test will show strong potassium alkali remaining in the root canal. I have frequently added iodine to a strong solution of potassium iodide. The solution would be nearly black with iodine. A current of 3 milliamperes for 10 minutes would often make the cotton in the canal white again. My theory is that as the iodine left the potassium iodide and passed into the tissues, the free iodide was taken up into the chemical solution and it also passed into the tissues:

Experiment—Solution of potassium iodide and starch in a U tube. Try litmus test. Then pass current and show blue at negative electrode and alkali at positive electrode.

Leduc of France experimented as follows:—At one side of a rabbit a two per cent. sulphate of strychnia was placed with the positive electrode, applied. The negative electrode was applied at the other side by a water compress. A current of 60 to 100 milliamperes was employed and after some seconds the reflexes of the rabbit were markedly exaggerated and soon after it died in a convulsion. Death was apparently due to strychnia poisoning.

Another rabbit was similarly treated except that cyanide of potassium was used and the negative electrode applied to it. The second rabbit became rigid and quietly died. Death was apparently due to hydrocyanide intoxication. When these medicines were similarly applied except that the current was reversed neither rabbit was affected in the slightest degree. Proving the penetration of the ions according to their polarity by the electric current.

To quote from Sturridge, of London, England:—

“A perfect method of sterilizing root-canals is to be found in ionic medication. In a tortuous or constricted canal, the application of 2 or 3 m.a. of current for 5 or 6 minutes is sufficient to produce ions from a compound solution of antiseptic salts, which will penetrate the length of the canal and sterilize it effectively. The saturation of the tubules with septic matter in long-standing purulent canals often makes ordinary antiseptic dressings too superficial and imperfect to accomplish complete sterilization; but by ionic medication with some powerful antiseptic salt, such as zinc chloride or silver nitrate, the tubules are penetrated by zinc or silver ions, and perfect sterilization of the lining walls of the canals is effected. Five or six minutes will be sufficient to sterilize the canal, and two or three canals in one tooth can be done at the same time by placing electrodes in each and connecting them all with the current electrode. A 5 per cent. solution of zinc chloride

for anterior teeth, or a solution of silver nitrate for posterior teeth, are effective drugs for this treatment."

Before passing to the technique allow me to cite a few cases in practice.

Case 1.—Miss B. presented suffering greatly from acute abscess in first lower molar. Through a crown cavity the pulp chamber and root canals were cleansed. A solution of cocaine was placed into the root canals and the positive electrode placed in cotton in the solution in the pulp chamber. With current of 2 to 3 milliamperes all pain ceased in a few minutes. Then hydrogen peroxide was substituted for the cocaine, the polarity reversed and oxygen was driven through the root tissue and the surrounding tissue. The patient reported having had no more discomfort. After a period with anti-septic dressing to allow the periodontal tissues to become normal, the tooth was satisfactorily filled.

Case 2.—Mrs. G. had the apical portion of an upper lateral root removed to cure an alveolar abscess, but without favorable result for a sinus remained through which discharged for several months a serous pus. After a single treatment with zinc ions the discharge stopped and the sinus closed. A subsequent treatment was given to ensure complete sterilization of the root, and the root filled. I cannot say but that conditions about that root may be favorable for re-infection either through the blood stream or through the periodontal tissue. Any calcarious or plaque deposit on the root or sharp margin of the root end would probably continue an irritation with congestion and reinfection. Since writing the above this lady visited me and showed me that the alveolar tissues are apparently perfectly healthy ten months after treating.

Case 3.—Dr. A. had an upper molar treated with local dressings for alveolar abscess with discharging sinus. It was unsuccessful for months, apparently because the buccal root canals were so crooked that they could not be followed and the apical parts were filled with putrescent matter. As the electric current follows the path of least resistance which would be the fluid and apical opening it was used with hydrogen peroxide. A single treatment of oxygen stopped the pus and apparently effected a cure.

Case 4.—A somewhat similar case was that of Mrs. W., who had a bicuspid with a long standing abscess that had produced a large hard lump on the jaw, evidently by having raised the periostium. From some cause it had become acute and very painful. I applied the negative electrode with potassium iodide to drive iodine through the root and surrounding tissues. The result at first was unsatisfactory, and I believed because the root canal was so small that I could not follow to within 5 or 6 millimetres from the apex. I opened the abscess and got a very little pus, then placed my electrode in the small pus area outside the bone and infiltrated with iodine. Two more applications were made in periods of three days in the root canal which I had followed nearer to the apex and the case made satisfactory progress, the hard swelling rapidly subsiding.

Case 5.—Mrs. P. had a cuspid devitalized and a fixed bridge placed from the cuspid to a molar. The cuspid became so sore that to bite on it was intolerable. Twice she went through a period of treatment of the cuspid, and the building and placing of another bridge but each time with, if possible, more distressing result. The cuspid would not permit any stopping in the crown opening because of pain that followed. Her dentist referred her to the exodontist to have the cuspid removed and he, dismayed at the loss of so valuable a tooth, referred her to me for a radiograph. I consulted both her dentist and the extracting specialist in regard to ionic treatment and both concurred heartily. Her dentist referred to his experience with that cuspid in words not found in the dictionary. I gave a treatment with zinc ions. Then to test the treatment I put a neutral dressing in the root canal and put a good cement filling in the coronal opening. No pain followed, which was a new experience for her. A couple of treatments were made at intervals of a few days, and she was referred back to her dentist. Because of family sickness, and perhaps carelessness, the tooth was neglected for a year, when trouble again developed, which was corrected again with ionic treatment.

Case 6.—I would like to cite one more case. Mrs. G. had a nervous breakdown, which confounded not only her physician, but also her dearest friends. She was referred to me to see if I could find any dental cause. A well built fixed bridge, extended from a lower first bicuspid to a molar. The only lesion I could find by x-rays was between and about the apices of the roots of that molar. The worst looking area was in the saddle between the roots. And I want to interject a statement that there is oftener a serious infection high up in the saddle between lower molar roots than is perhaps often suspected. Well, here was a case where it was important to save that molar, but more important to save the woman. I dare not perforate to the saddle to disinfect. I could not easily follow the small root canals, but did my best and freely enlarged as far as I followed. I used potassium iodide in the canals with the negative electrode and the result was like magic. In three weeks with two more treatments she pronounced herself well, said she felt "perfectly splendid."

For the ionization method of treating alveolar abscess the technique may be as follows:—

1. Preparation of roots.—The root canals should be mechanically cleansed of any contents, filling, or debris. The canals should be enlarged to the apical ends, thus offering space for more medicament. If the area of infection is chiefly about the apex, it is well to clear the apical opening. However, do not use a boring tool that will leave a ragged root end. If possible apply the rubber dam to keep saliva away. Any metallic fillings that might carry the current away should be removed or insulated with collodion, varnish or guttapercha. Fill the canal or canals with a strong solution of the medicament used. This may be done by loosely wrapping

cotton on a smooth broach, dipping in the medicine and leaving the saturated cotton in the canal. Provide good electric conduction as possible where you want the ions to go.

2. **Electrodes and ions.** I shall in this paper, for the sake of simplicity, suggest only a few medicaments that may be used. Zinc ions provide one of the best germicides, and are easily tolerated by the tissues. They may be obtained from a solution of almost any zinc salt, but zinc chloride is commonly used. The electrode used in the root is called the active electrode. The large electrode placed at some other part of the body may be called the passive or indifferent electrode. For zinc ions we usually make the active electrode from sheet zinc, cutting it like a broach, that will reach any desired part of the root canal. As zinc ions leave the solution to pass into the tissues they are re-supplied to the solution from the zinc electrode. This prevents any lack of zinc ions during the ionizing operation. Copper ions are said to be nearly equal to zinc, and may be obtained from solution of copper sulphate, using copper wire electrode gauge 25 to 27. The active electrode for zinc or copper must be positive. The metals are electro positive, and thus are repelled by the positive electrode and attracted by the negative electrode. You remember that like poles repel and unlike poles attract each other.

I think iodine should take first rank as a germicide, and nearly, if not quite, equal to zinc. Iodine ions may be obtained from potassium iodide. We also know the value of oxygen as a germicide. Oxygen ions may be obtained from peroxide of sodium or hydrogen. A platinum or gold wire electrode is ideal, but copper wire seems to be satisfactory, and may be easily obtained and easily adapted to any root. For iodine or oxygen the active electrode must be negative. I usually paint the active electrode with collodion to within about a quarter inch of the end to insulate all but the exposed part. The electric current always follows the path of least resistance, and with it the ions. Suppose we had an abscess about the apex of a root. Suppose that root canal had a filling or was otherwise stopped through the apical half. And suppose the coronal half of the canal was freely enlarged, filled with medicament, and the current properly applied to it. The current would be chiefly out through the root walls about the medicament with little benefit to the abscess. If the abscess is about the apex, as the subject I am asked to treat would usually suggest, the canal must be opened for any kind of successful treatment. If the apical opening is cleared and filled with medicament it will offer less resistance and so pass more current than the surrounding canal walls, and with the current go the ions, right into the abscess pocket. In treating a periapical abscess it is best to insulate the active electrode as described, where it passes through the coronal half of the canal. Some current would pass down the canal through the medicine even if the electrode be placed a short distance in the

canal, but so little that the result would likely be unsatisfactory. The degree of concentration of the solution in the canals has nothing to do with the penetration of the ions, provided only that we provide enough ions in solution. A given current of electricity in a given time will carry a definite amount of ions a definite distance. While the ions are under the influence of the electric current they have no chemical affinities. As soon, however, as the current ceases the ions are free and nascent to form chemical combinations. Ions in the tissues may have a different therapeutic effect from the same medicine injected in the tissues. When a fluid is injected in the vascular tissue it follows the line of least resistance, which is usually the blood circulation. It is different with ions which go with the electric current. They may stop in the body of a cell or in the body of a microbe. The hardness of the root tissue offers no resistance to the passage of the ions. An ion in the tubule of a root would be like a pebble in a trunk sewer. An essential oil or similar germicide placed in a root canal might disinfect the root tubules but little, and have no effect on the root surface, where the disinfection is as much needed. Even if the ordinary germicide is forced through the apex and appears to heal the abscess, if bacteria still live in the substance of the root, or outside the root, they may reinfect the whole again as soon as the disinfecting medicine is dissipated. We believe both from theory and experience that ionic treatment is effective and permanent.

The indifferent electrode may be the ordinary faradic battery type for holding in the patient's hand. It should be made wet for better electric conduction. It should not rest against a metal ring on the finger, else the electrolysis inside the ring will leave a sore. My objection to the hand electrode is that the patient may voluntarily open the hand and so allow too little current to pass, or perhaps involuntarily tighten the hand on the electrode, improving the conduction, increasing the current and causing pain. I usually place a pad of cotton batting wet with weak saline solution on the cheek, and over this a thin sheet metal electrode. This all is held in place by the band of the rubber dam holder, or by an elastic band over the head and under the chin. Thin chamois or cotton as sometimes recommended will often cause a sore spot on the cheek, because the ions formed at the metal surface so near the tissue often form compounds that cauterize the tissue. The indifferent electrode is perhaps a thousand times as large as the small active electrode in the root, but carries exactly the same current. Thus the electrolytic action at any one point on the face is one-thousandth times as great as at a point in the root canal, and with a good wet pad there is no action on the face.

3. Electric current supply. The current must be direct. No connection with the commercial alternating current can be satisfactory. The current should be smooth. Any fluctuations cause discomfort to the patient. The commercial direct current always has some fluctuation, and for this reason is less comfortable for the patient than a battery current. However,

I have usually used the commercial D.C., because of its convenience and certainty. I pass it through a five-candle carbon film lamp, then through a rheostat that offers any degree of resistance up to one million ohms, then through the patient and the milliampere meter all in series. With this I start with a current of less than half a milliampere, and in a few seconds endeavor to work up to three milliamperes if treating one root. The patient feels some sensation at the electrodes, but little or no real pain. A more ideal and comfortable arrangement with the commercial D.C. is to pass it through a 16-candle carbon film lamp, then through a variable resistance, and from the variable resistance take a shunt through a rheostat to the patient. There is a little danger in this method in that if anything happened the variable resistance, its current would be added to that on the shunt to the patient and give a painful shock. It is to avoid this possible accident that I use all resistances in series.

The ideal current supply is that from a galvanic or storage battery giving 16 to 24 initial volts. With a good indifferent electrode this should give a current of 2 to 6 milliamperes through the root. A current of 3 milliamperes for 15 minutes using zinc or iodine properly applied will sterilize a root and surrounding tissues as no retained medications ordinarily accomplish. A milliampere meter should always be used, otherwise it is a guess how much current is being used. Four milliamperes is the comfortable maximum. A dentist used an outfit for months without a meter, and when he complained about results being unsatisfactory it was found that his connections were such that he had no current at all. A simple water rheostat will answer, using an ordinary two-quart sealing jar with a lead plate in the bottom and a pointed lead plate entering the top of the water. Pure water offers great resistance. A drop of salt may be added to lower the resistance as desired.

The wires leading to the patient should be light and flexible and insulated with different colors to distinguish the positive from the negative. A simple way to find which is positive and which is negative is to put a few drops of potassium iodide on white blotting paper. Lay the two exposed wires half an inch apart on this. In a moment a brown stain will be found under one wire, which is the positive. There need be no elaborate connections for the electrodes. Soft copper wires can easily be cleaned and firmly twisted together, and are simple and inexpensive.

The same apparatus may be used for local anæsthesia of tooth or other tissue, for treating pyorrhea, cysts, fistulæ or bleaching teeth. No force at our command operates with greater certainty than electricity, and none more simple. It is to be hoped that the scientific and certain nature of ionic medication may attract every young dentist to its benefits.

Dental Societies

CANADIAN DENTAL ASSOCIATION

The next regular biennial meeting of the Canadian Dental Association will be held in Montreal on September 12, 13, 14 and 15. A large number of Canadian dentists have gone to "do their bit" in the great European conflict. Others expect to go during the coming summer..

It is earnestly hoped by the Executive Committee that all those of our number who can do so will make a point of attending the coming meeting.

An excellent programme is being prepared, and September is an ideal month in which to visit Montreal, Quebec and the mighty St. Lawrence.

WESTERN CANADA DENTAL SOCIETY

The Western Canada Dental Society will be held in Regina, June 26, 27 and 28, 1916.

EASTERN ONTARIO DENTAL ASSOCIATION

The Eastern Ontario Dental Association will hold their meeting at Stanley Island, June 21st, 22nd and 23rd inst. L. E. Stanley, Ottawa, secretary.

ROYAL COLLEGE OF DENTAL SURGEONS EXAMINATIONS RESULTS

The Board of Directors of the Royal College of Dental Surgeons held their annual session, with the following in attendance: Dr. W. C. Davy, Morrisburg, president; Drs. M. A. Morrison, Peterboro'; W. C. Trotter, Toronto; A. D. A. Mason, Toronto; D. Clark, Hamilton; H. R. Abbott, London, Ont.

The results of the recent senior examinations were considered, and the following have been passed and granted the degree of licentiate of dental surgeon:

Robert Harold Aljoe, Roy Melville Anderson, Harvey Chetwin Arnott, Garnet Douglas Beierl, D.D.S., Emerson George Berry, William Ernest Boyd, Thomas Donald Campbell, Frank Wallace Canning, Edwin Harrison Clark, Harry Roberts Conway, John Joshua Craig, Gordon Campbell Dewar, J. A. Eagan, William James Eggleton, D.D.S., Bruce Edward Eaid, Frederick George Garvin, George Franklin Gibson, Richard Johnston Godfrey, Hadley C. Goodhand, Charles Lynn Grant, Lloyd

Eugene Harriman, Thomas Fortune Holt, Sidney James Hughes, Fred E. Humphrey, Howard James, Ernest Fletcher Jamieson, A. J. Kennedy, D.D.S., John Chatteris Livett, Stanley Carl Lucas, D.D.S., Roy Harvey Mills, Robert George Boyd Musgrove, R. J. McCallum, Hugh Gerald McDonell, Lloyd Drake McLaurin, Nathaniel Bowland McLenaghan, Gerald Roy McMillan, John Glenney Pilkey, Albert Clarence Pye, D.D.S., Harold Kerr Richardson, Harold Scott, David Iser Siegel, U. B. Shantz, D.D.S., William Slater, Harry Lyle Smith, George A. Sproul, Arthur Clenden Steele, William John Taylor, William Wilford Weir, Franklin Milton Williamson.

Dr. H. J. Markley passed the examination for master of dental surgery.

PASSED SECOND YEAR.

Harold Henry Abell, Walter George Alston, Archie Burton Babcock, Laurier Ballantyne, William Henry Barber, Harvey George Bean, Kenneth Berry, John Cameron Wilson Broom, John Louis Burgess, Arthur Edward Chegwin, Roland MacIntyre Clark, Frank L. Cole, David Cook, Oliver Gordon Dalrymple, Everett Victor Elliott, Herbert Lindsay Field, George Vernon Fisk, Vivian S. Fournier, R. W. Freestone, Cecil Harold Fulford, Roy Gilbert, Thornton Ingram, James Wesley Ingram, Stewart McKee James, Charles Lloyd Jones, Robert Edgar Laing, John Tompkins Lebbetter, Henry Douglas Leuty, James Benson Whitely Long, Hubert Maranda, William Morton MacKay, Morris Clarke Mills, Marjorie Elma Milne, Robert John Morell Montgomery, Carl Thomas Moyle, Harrison J. Mullett, Gordon Sutherland Murray, Guy Reginald Murray, Alexander Edward Murphy, Harold Joseph Murphy, James Oscar McCutcheon, Cecil Alonzo McDonald, Edmund Stanley McGowan, Lorne Stanley McLachlan, Leo Parr, Lorne Russell Pattison, Stanley James Phillips, Arthur Reginald Poag, George Pollock, Harvey Wilson Reid, James MacReveler, Harrison Charles Roos, John Vernon Ross, Wm. Ernest Sheridan, George Armond Sirrs, John Mac Sheldon, Douglas Speer, Samuel William Sproule, Robert Alexander Strathern, Norman Basil Temple, Morley Thompson, Fred Lionel Thompson, Lawrence Thompson, Norman Truemner, Lloyd Thomson Veitch, Harold Brock Walker, James Gardiner White, Clair Jory Wood.

PASSED THIRD YEAR.

William Wilfred Astle, Frank Bechely, Frank Earlby Bell, Ariel Edwin Benson, Roy Wellington Blackwell, Robert Muirhead Box, Joseph William Earle Brown, Alvan Elmer Cavanagh, William Chartrand, John Warren Coates, Charles Russell Collard, Clarence A. Coyne, Lewis Davidson, Franklin Murray Deans, Wallace Roy Elgie, Eldon Winger Eby, Harold Grant French, Francis Joseph Furlong, Colwell Campbell Graham, Milton Henderson Hagey, Russell Weir Hoffmann, Michael Joseph Hooley, Harry M. Katzenmeir, William Oliver Kaufmann, Robert

Ross Larmour, George Arthur Lee, Clarence Howard Lipsey, William Alfred Loveridge, Allan C. Myles, William Campbell MacLachlan, Peter McIntyre, Samuel Perlman, Melvyn Gordon Robb, Edgar John Robb, Joseph Ryan, Stanley Victor Saunders, William Hudson Scott, William Stewart H. Sinclair, Harry LeRoy Smith, Harold Ebenezer Smith, Lloyd Reuben Stedman, Ray John Stone, Robert Frank Taylor, Jacob Elmore Truemner, John Whitlock Turner, Albert Garfield Wicks, Erle Franklin Whaley, Stanley George White, Roy Osborne Winn, Russell Clifford Wood.

LAVAL UNIVERSITY DENTAL SCHOOL

The following students have obtained the degree of Doctor of Dental Surgery at the examinations just ended:

Joseph Michaud, Leon Choquette, Armand Hebert, Louis Edouard Perrault, Magna Cum Laude.

Vincent Maranda, Henri L. Fortin, Paul Hamel, Noel Decarie, Aristide Brosseau, James McLaren, Cum Laude.

Henri Brault, Edouard Prefontaine, Anatole Terrien, Henri Houle, Orille Geoffrion, J. Raoul Hebert, Victorin Gervais, Maurice Laurence, Ls. Philippe Coutu, Jean Brennan, Elphege Fontaine, Philippe Verner.

DENTISTS IN ATTENDANCE AT THE ONTARIO DENTAL SOCIETY, TORONTO MAY, 1916

1872—Carl E. Klotz, St. Catharines, Ont.

1877—C. B. Dorland, Oakville, Ont.; W. F. Sudworth, Ingersoll, Ont.

1879—E. Hart, Brantford, Ont.

1882—O. H. Zeigler, Toronto.

1885—J. Frank Adams, Toronto.

1886—A. M. Clark, Woodstock, Ont.

1887—D. Baird, Toronto; A. H. Allen, Paisley, Ont.

1888—J. H. Frain, Norwich, Ont.; D. Clark, Hamilton, Ont.; W. E. Willmott, Toronto.

1889—J. J. Kerr, Cobourg, Ont.; R. G. McLaughlin, Toronto; A. Rose, Toronto; J. W. B. Topp, Bracebridge, Ont.

1890—Mark G. McElhinney, Ottawa, Ont.; A. Allan Black, Kingston, Ont.; J. F. Sangster, Trenton, Ont.

1891—O. Lillie, Westport, Ont.; A. H. Mabee, Gananoque, Ont.; G. Wright, Trenton, Ont.; T. C. Trigger, St. Thomas, Ont.

1892—H. F. Kinsman, Sarnia, Ont.; Frank D. Price, Toronto; S. C. Wilson, Perth, Ont.

1893—J. J. Loftus, Toronto; H. E. Eaton, Toronto; E. A. Peaker, Toronto; L. J. Well, Toronto; Harold Clark, Toronto; J. S. Brooks, Little Current, Ont.; D. E. Russell, Brantford, Ont.; C. J. Smith, London, Ont.; Chas. H. Waldron, Toronto.

1894—M. F. Cross, Ottawa, Ont.; A. A. McKenzie, Tottenham, Ont.; B. F. Nicholls, Toronto; A. E. Webster, Toronto; J. N. Wood, Toronto.

1895—A. J. Irwin, Wingham, Ont.; J. A. Fleming, Prescott, Ont.; R. A. Willmott, Strathroy, Ont.

1896—T. E. Ball, Harriston, Ont.; R. H. Henderson, Toronto; L. M. Mabee, Goderich, Ont.; Chas. E. Pearson, Toronto; A. T. Sihler, Simcoe, Ont.

1897—A. E. Little, Owen Sound, Ont.; W. E. Lundy, Toronto; A. R. Kinsman, Exeter, Ont.; Geo. A. Kennedy, London, Ont.; R. J. McGahey, Toronto; A. E. Cummings, Thornbury, Ont.; W. Burnet Galt, Ont.; C. E. Beihn, Chesley, Ont.; Ford Butler, Aurora, Ont.; W. S. Westlan, London, Ont.

1898—H. M. Kalbfleisch, West Toronto; J. A. Locheed, Hamilton, Ont.; G. G. Jordon, Toronto; W. J. Hill, Alliston, Ont.; R. R. Harvie, Midland, Ont.; J. A. Hilliard, Berlin, Ont.; F. Waugh, Kingston, Ont.; Arthur Dar, Toronto; J. M. Hutchinson, London, Ont.; W. D. Staples, Hanover, Ont.; W. G. L. Spaulding, Toronto; U. B. Shantz, Berlin, Ont.; M. J. Clarke, Belleville, Ont.

1899—A. G. Campbell, Wallaceburg, Ont.; T. A. Currie, Toronto; T. F. Campbell, Galt, Ont.; C. A. Kennedy, Toronto; S. B. Gray, Toronto; S. L. Frawley, Toronto; J. C. Devitt, Bowmanville, Ont.; J. F. O'Flynn, St. Catharines, Ont.; G. L. Palmer, Toronto; O. G. Plaxton, Parry Sound, Ont.; A. A. Smith, Toronto; C. A. Snell, Essex, Ont.; F. R. Watson, Georgetown, Ont.; W. T. Williard, Toronto.

1900—F. P. Moore, Hamilton, Ont.; R. T. McDonald, Hamilton, Ont.; S. M. Kennedy, London, Ont.; R. D. Jarvis, London, Ont.; O. I. Cunningham, London, Ont.; E. S. Baker, Stouffville, Ont.; W. T. Holloway, Peterboro'. Ont.; E. L. Gausby, Toronto; W. T. B. Amy, Toronto; S. T. Floyd, Toronto; R. J. Sprott, Barrie, Ont.; Wallace Secombe, Toronto; E. P. Smith, London, Ont.; J. E. Rhind, Toronto; T. N. McGill, Toronto; A. J. Broughton, Toronto; J. J. Wilson, Burks Falls, Ont.; A. E. Santo, London, Ont.; W. J. Woods, Toronto.

1901—A. Jemison, Millbrook, Ont.; H. Hartman, Meaford, Ont.; E. W. Paul, Toronto; W. A. Maclaren, Toronto; J. S. Chambers, Toronto.

1902—A. E. Hicks, Chatham, Ont.; Chas. E. Sutton, Toronto;

Chas. G. Scott, Toronto; G. M. Trewin, Oshawa, Ont.; A. D. A. Mason, Toronto; P. E. Clarkson, Toronto.

1903—W. J. McMurray, Ingersoll, Ont.; G. H. Coram, Toronto; J. A. Slade, Toronto; J. P. McLachlan, Toronto; Geo. Everett, Hamilton, Ont.; E. F. Arnold, Toronto; M. P. Corrigan, Strathroy, Ont.

1904—W. C. Davy, Morrisburg, Ont.; C. M. Dent, Ottawa, Ont.; V. LeRoy Heath, Woodstock, Ont.; M. S. Hawkins, Port Hope, Ont.; W. J. Loftus, St. Catharines, Ont.; C. F. Freeman, Beamsville, Ont.; B. O. Fife, Toronto; R. M. Stewart, Markham, Ont.; A. A. Stewart, Toronto; H. A. Robertson, Hamilton, Ont.; D. R. Nethercott, Stratford, Ont.; A. W. Ellis, Toronto; C. H. Clarkson, Toronto; T. E. C. Butler, Toronto; M. A. Ross Thomas, London, Ont.; B. E. Wilson, London, Ont.; O. Watson, Campbellford, Ont.

1905—E. M. Fulton, Hamilton, Ont.; E. A. Hill, Sudbury, Ont.; C. L. Huffman, Forest, Ont.; F. C. Husband, Toronto; H. W. Anderson, Toronto; J. F. Grant, Durham, Ont.; H. N. Wilkinson, Newmarket, Ont.; C. C. Nash, Kingston, Ont.; J. L. Anderson, Oakville, Ont.; P. T. Coupland, St. Mary's, Ont.; J. W. Coram, Toronto; S. M. Thomas, London, Ont.

1906—A. V. Lester, Hamilton, Ont.; M. A. Day, Belleville, Ont.; S. W. Bradley, Richmond, Ont.; W. R. Glover, Kingston, Ont.; G. M. Gorrell, Morrisburg, Ont.; P. St. C. Smith, Toronto; W. C. Smith, Toronto; L. G. Smith, Toronto; G. F. Roulston, Exeter, Ont.; H. A. McKim, Toronto; N. S. Coyne, Toronto; J. A. Bothwell, Toronto.

1907—E. A. Dolson, Toronto; Geo. N. Howden, Watford, Ont.; A. W. Muir, Fergus, Ont.; W. A. Black, Toronto.

1908—H. M. Morrow, Hamilton, Ont.; T. D. Higginson, Ottawa, Ont.; W. A. Dalrymple, Toronto; H. G. Wilkinson, St. Mary's, Ont.; L. G. Thomson, Toronto; H. W. Reid, Toronto; A. A. Mathison, Toronto; W. L. Chalmers, Alexandria, Ont.; O. S. Clappison, Hamilton, Ont.; J. A. C. Crawford, Haileybury, Ont.; M. R. Billings, Cayuga, Ont.; C. E. Brooks, Toronto; J. N. Stewart, Hamilton, Ont.

1909—W. A. Armstrong, Ottawa, Ont.; R. E. Fisher, Toronto; R. S. Woollatt, Toronto; R. R. Walker, Bolton, Ont.; R. J. Vance, Waterdown, Ont.; E. C. Veitch, Toronto; E. W. Sisson, Whitby, Ont.; R. E. Stewart, Elmira, Ont.; Arnold Semple, Toronto; A. H. Pratt, Kemptville, Ont.; W. J. Preston, Berlin, Ont.; R. F. Morrow, Peterboro', Ont.; W. H. Coon, Toronto; J. M. Cation, Toronto; F. Barron, Paris, Ont.

1910—T. W. Dawson, Toronto; J. A. McTaggor, Blythe, Ont.; F. G. Law, Toronto; M. L. Laidlaw, Toronto; O. L. Weaver, Cornwall, Ont.; Wm. E. Wray, Toronto.

1911—M. J. Rudell, Guelph, Ont.; W. S. Madill, Toronto; E. A. Higley, Chatham, Ont.; M. T. Armstrong, Parry Sound, Ont.; W. J.

Schwartz, Toronto; F. L. Schnurr, Toronto; G. H. Ross, Wingham, Ont.; R. A. Patterson, Kemptville, Ont.; L. A. Moffatt, London, Ont.; H. B. McKay, Ingersoll, Ont.

1912—C. J. Devine, Beaverton, Ont.; A. R. Hynes, Toronto; G. A. Liscumb, Drayton, Ont.; R. D. Thornton, Toronto; L. E. Tanner, Toronto; A. S. Thomson, Toronto; W. F. Roper, Toronto; W. E. Morgan, North Bay, Ont.

1913—R. C. Davis, St. Catharines, Ont.; G. W. Harris, Southampton, Ont.; J. C. Allen, Toronto; G. C. McKinley, Toronto; W. H. McLaughlin, Hamilton, Ont.; W. J. Fuller, New Liskeard, Ont.; Hugh Cunningham, Toronto; M. C. Tindale, Milverton, Ont.; J. M. Rutherford, Toronto; M. Pivnick, Toronto; H. H. Armstrong, Toronto.

1914—S. C. Rutledge, Hamilton; E. W. Fuller, London, Ont.; S. S. Ionson, Port Rowan, Ont.; Harry Holmes, Toronto; A. N. Hill, Dundas, Ont.; L. H. Kreuger, Toronto; Grant Fraser, Madoc, Ont.; W. J. Watson, Toronto; R. G. Ward, Toronto; W. D. Stevens, Westport, Ont.; H. A. Stewart, Kingston, Ont.; C. R. O'Brien, Toronto; N. M. Mooney, Toronto; I. H. Ante, Toronto; L. F. Boyle, Toronto.

1915—H. A. McClean, Milton, Ont.; G. S. Smockum, Pembroke, Ont.; H. J. D. Robinson, Ridgetown, Ont.; Jos. Priestman, Toronto; J. F. O'Brien, Bancroft, Ont.; E. C. Boyle, Toronto; G. P. Britton, Guelph, Ont.

1916—Arthur C. Steele, Fergus, Ont.

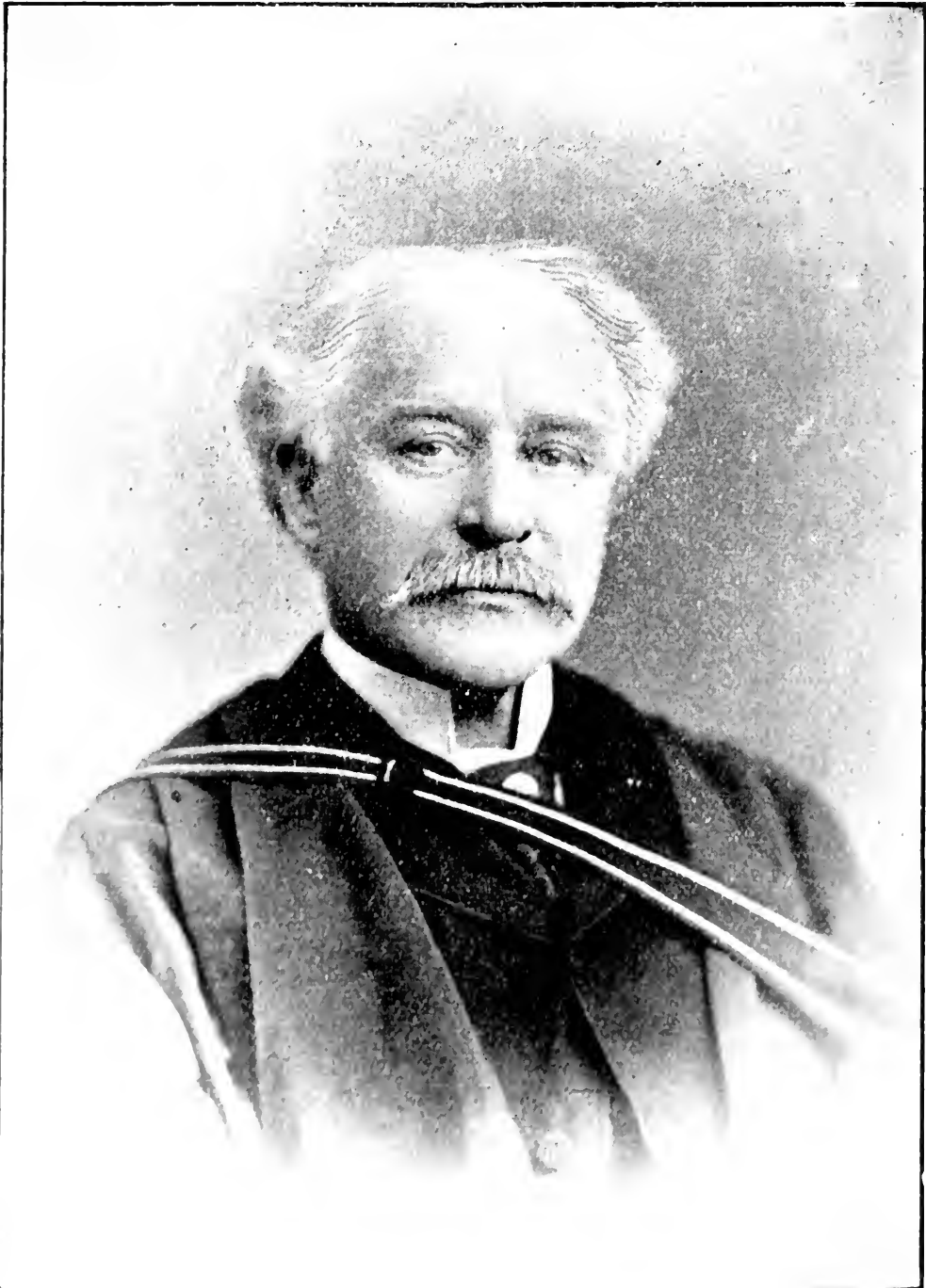
Guests—Lieut. B. R. Gardiner, C.A.D.C.; Lieut. W. G. McL. Dolson, C.A.D.C.; Lieut. Geo. S. Hollinghead, C.A.D.C.; Dr. Jos. Nolin, Montreal, Que.; Dr. A. W. Thornton, Montreal, Que.; Dr. Elmer S. Best, Minneapolis, Minn.; Dr. W. A. Giffen, Detroit, Mich.; Major Clayton, C.A.D.C.; Lieut. J. A. Dunning, C.A.D.C.; Lieut. F. C. H. Briggs, C.A.D.C.; Lieut. R. G. McLean, C.A.D.C.; Capt. G. S. Switzer, C.A.D.C.; Capt. J. H. Roberts, C.A.D.C.; Capt. W. G. Thompson, C.A.D.C.

NATIONAL ASSOCIATION OF DENTAL FACULTIES

The National Association of Dental Faculties will hold its next meeting at the Seelbach Hotel, Louisville, Ky., July 22 and 24, 1916. Charles Channing Allen, secretary, N.W. cor. 10th and Troost, Kansas City, Mo.

PUBLISHERS' NOTE

With this issue the publishers of the DOMINION DENTAL JOURNAL have changed the dress of the journal, maintaining all of its historical features and improving the cover page. They also publish a cut of the late W. George Beers, founder of the journal in 1868, together with a historical address by Dr. Beers delivered in New York State at a time when British connections were not so popular as they are to-day.



The late Dr. W. George Beers, founder of Canadian Dental Journalism and Canada's National Game, Lacrosse.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, MAY 15, 1916.

No. 5

CANADA NOT FOR SALE

In order to give some idea of the stalwart patriotism of Dr. Beers, the following speech, delivered by him at Syracuse, N.Y., on the 25th October, 1888, at a banquet given by the New York State Dental Association, will well repay a careful perusal.

Coming as it did at a time when so much feeling had been aroused by President Cleveland's retaliation policy, this spirited and fearless defence of Canada's position did much to encourage and hearten up Canadians, as well as to elevate this country in the estimation of fair-minded Americans.

Dr. Beers was an honored guest of the American association upon this occasion, and in response to the rather strangely worded toast of "Professional Annexation," he spoke as follows:

Mr. Chairman, Ladies and Gentlemen,—I must confess to a good deal of embarrassment in replying to a toast which is intended to be both professional and political, but I have been specially asked to do so by the chairman, and if I should offend anyone, as I must say exactly what I think, I can only offer to settle on the spot by inviting you, as the boys say, to

"come out in the alley!" I have neither the presumption nor the vanity to imagine that I am able to do justice to the personal and professional courtesies which Doctor Jonathan has always bestowed upon his Canadian friends, as well as to the magnificent ignorance—sometimes ill-nature—which Senator Jonathan has recently lavished upon his Canadian foes. But I can assure you that not even the professional liars that supply the New York "Herald" with Canadian news, or the wily politicians who eat forked lightning for breakfast and dynamite for dinner; not even the insane malice of men who hate Canada, as they may hate Cyprus, because it belongs to Britain; not even this can lessen the admiration Canadians have for the many noble and generous traits of character which belong to their American cousins. I am sure I speak, too, for my brethren from loyal Toronto, when I say that we have too often been under deep professional obligations to the kind nature of the cousin we still, from custom, call "brother," not to know that, however we differ politically, you

RESPECT OUR NATIONAL CONVICTIONS

as you wish your own respected; and that as you choose to hit at us hard, you have enough of English fair play to take a drubbing back, and to allow the possibility of Canadians loving and defending the fame and good name of the Dominion, quite as much as you love and defend that of your Republic. No one more than loyal Americans would despise the poltroon who carries his patriotism in his pocket; the disloyalty of the political parasite who would make patriotism a house of cards, and dollars the chief end of a people; intriguers who hiss out secession or annexation when they fail to get their political crime or crotches enshrined; men whose hunger for notoriety and power is a fever of existence. I am sure that you could have nothing but contempt for any free people who measure their allegiance purely by commercial standards, and who, fearing to face the difficulties which meet every nation, turn peddlers instead of protectors of their national birth-right. Just as you had and have your croakers and cowards we have ours, but, Mr. Chairman, Canada is not for sale! There have been prophets like Goldwin Smith since the days of Elizabeth, who have predicted England's decline within their time, but all the colonial greatness of England has been developed since the time of Elizabeth. We have, as you have, bitter partisans in the press and in politics who delight to foul their own nest, who revel in the rain that destroys the crops, and who sincerely believe they can change the climate if they could change the Government. We have a few of those wiseacres of society who assume to possess a monopoly of foresight, and who, like Caius Caligula, think the world would have been better made could they have been consulted. But these people no more represent the convictions of Canadians than O'Donovan Rossa, or your fire-eating politicians and papers represent those of true Americans. I have no desire to hurt anybody's feelings here, but I hope I may be allowed to say something to remove the infatuation too prevalent in the States that Canada favors annexation.

Were we to judge you as you judge us—by the vapping of the croakers, what value could we put upon your union, and would we not feel like agreeing with Rossiter Johnson, who in his “Short History of the War of Secession,” just published in Boston, thinks he sees in certain national circumstances the threatening elements of a second civil war? For years before the last civil war you had fire-eaters whose arrogance and vanity knew no bounds; who were advised by the Canadian press to study the elements of discord in the South instead of hankering for new ones in the North. It was just the same when years before that Georgia and Carolina appealed to arms and defied the general Government. Surely two threatened disruptions and one terrible civil war in the history of a century should be enough. But last Fourth of July I was near enough the “Reunion of the North and South” on the battlefield of Gettysburg, to see the ex-Confederates wearing the starred and barred badge, with the inscription upon it, “This was the flag of treason and rebellion in 1861, and it is the flag of treason and rebellion in 1888.” I read the protests of General Wagner, General Gobin and the Quartermaster-General of the Grand Army of the Republic against the gush and glorification of the rebels because they had been rebels. I heard one officer boast that Southern privateers had destroyed \$500,000,000 of your property, and had driven a quarter of a million tons of your shipping to make transfer to the British flag. I heard another gloat over the fact that they had nearly captured Philadelphia. I heard scores declare that they had not been beaten but starved. Reflecting upon all this, and hearing at this very hour the discordant echoes from that quarter, it strikes me that if senators like Mr. Blaine are sincere in their effusive professions of patriotism, they could find a good deal to monopolize their genius down there in Dixie without meddling in the politics or the future of Canada. Canada minds its own business, and does not worry itself over yours, though you have coddled and dry-nursed her enemies, and when she was at peace with you, allowed a horde of your citizens to invade her. Frankly, I may say that while I believe Canada

HAS BEEN A FAIR NEIGHBOR

too often she had not found her cousin one. If for once in the Treaty of Washington, remembering Main, Oregon and San Juan, she did not let your diplomatists get the better of her, she felt that she had given you at least a reasonable *quid pro quo*. During the civil war we allowed your armed troops to cross from Detroit to Niagara on Canadian territory on the Great Western Railway; but during the Red River rebellion of 1869, your Government refused leave to one of our vessels to go up the Sault Ste. Marie Canal, and arms and ammunition were transhipped at considerable delay. When the St. Albans raiders, unknown to us, entered your territory from Canada, your Government was asked for its bill of damages, and it was

paid. When the Alabama claims bill was presented, it was paid so well that years after every possible claim was settled, your Government retains a large balance which should have been refunded to Britain! What about the damages done to Canada in Canada by your citizens during the Fenian raids, most of them wearing the uniform of branches of your national troops? Not a cent has been paid. You expected Canada to know that a few quiet and straggling Southerners intended to raid St. Albans; you thought that England should have known that a solitary cruiser intended leaving one of her ports to prey upon your commerce. But what a splendid display of reciprocal consistency, that thousands of armed men should openly muster and drill in your chief cities for months before; openly occupy your border towns and villages, and attempt to invade us, and your Government comparatively oblivious! In the face of these facts, it is not easy to swallow the statements or believe in the honesty of public men who talk of the exactions and encroachments of a people of 6,000,000 upon a people of 60,000,000.

CANADA CANNOT BE COERCED

or forced into union with such examples of political hypocrisy. There was a time, twenty years ago, when we were disconnected provinces; when Canada proper contained only 370,488 square miles: when we had few railways; when stagnation seemed to mark us; when we had no winter outlet of our own to the sea; when our great Northwest was a great unknown. Even then annexation was unpopular. There had not been enough accomplished then by Canadian statesmen to make their rivals envious, and your own statesmen did not dream that we could build a railway to connect the Maritime and the old Provinces, or that with a population of only 5,000,000, we would dare to span the continent with another, a work not accomplished by the States until they had 50,000,000. But can you be deceived into the belief that confederated Canada is now for sale, when since confederation, twenty years ago, our revenue or consolidated fund has immensely increased; when our shipping and its tonnage has more than doubled—young Canada standing fifth on the list of nations having more vessels than old France, Spain, Italy or Russia; when the assets of our chartered banks, the value of our imports, the extent of our exports tell a story of our marvelous progress; when, instead of about 2,000 miles of railway in 1867, we have now over 14,000, giving us a greater mileage than any other part of the Empire, excepting the United Kingdom and India; when the Canadian Pacific Railway has established a line of steamers between Vancouver and Hong Kong and Japan, and our great Canadian line has become of Imperial importance; when we have developed our inexhaustible fisheries, thanks to your abrogation of the Reciprocity Treaty, so that we have 75,000 hardy men sailing our vessels and otherwise engaged in the business, and for 1887 we valued those fisheries at \$20,000,000! Can you wonder that annexation, as a serious subject, has received

its doom, and that in spite of the intoxication of senatorial conceit on the one side, and the croaking of malcontents and political tramps on the other, Canada is loyal to the Mother Country, from whose stout old loins both of us sprang? Confederated Canada, respected Canada, loyal Canada, progressive Canada, is a personal and political insult to the sorehead parties who opposed Confederation, and who would welcome

ANNEXATION TO TURKEY OR RUSSIA

were we neighbors, or rejoice even at annihilation rather than live the agonizing life of seeing their prospects and prediction destroyed. There were millions of your own citizens glad to do their worst to dismember your union; there were thousands who gave their lives to wreck the Republic that their own State interests might be promoted. Yet when a few obscure cranks in Canada declare in favor of annexation, you think they speak the sentiment of a sober people, who do not find it necessary to indulge in the spectacular or the rhetorical that you may see and hear the truth. You choose to ignore the treason of many a Southern newspaper to-day as you did twenty-five years ago, and you exalt as gospel the partisans of the Canadian press, who are incapable of telling the truth.

Personally and professionally, I am sure any dentist who visits you forgets he is not an American, and I am sure we try to make Americans coming to Canada forget they are not Canadians. You have big and hospitable hearts that were intended for hospitality, and not for quarrel. Personally, and even commercially, we can find so many points of common agreement that we should overlook the few where we must agree to differ. Politically, I realize I am a foreigner here the moment I cross the line. I am at home when I land at Liverpool, at Glasgow, at Dublin, at Bermuda, New South Wales, Victoria, Queensland, New Guinea, Jamaica, Barbadoes or Trinidad. Politically, I have a share in, and am proud of, the glorious old flag which waves over New Zealand, Australia, Gibraltar, Malta, Hong Kong, West Africa, Ceylon, St. Helena, Natal, British Honduras, Dominica, the Bahamas, Grenada, Barbadoes, India. England is an old and apt master in annexation. Since she lost the thirteen colonies here, she has annexed colonies far greater in area and population, of far more value to her than if they were joined to her three kingdoms, while Spain, Portugal, Holland and France have lost theirs, and there is little or nothing left for any other nation to annex. I need no other political passport to the rights of a British subject, and the citizen of a great realm comprising sixty-five territories and islands, than my Canadian birthright. I do not measure my national boundary from the Atlantic to the Pacific, but from the Pacific to the Caribbean Sea.

UNDER THE REIGN OF VICTORIA

no Canadian need be ashamed to belong to an Empire which embraces a fifth of the habitable globe, and to know that his own Dominion forms nearly

a half of the whole; an Empire five times as large as that which was under Darius; four times the size of that under ancient Rome; forty times greater than United Germany; three times larger than the United States, Australia alone nearly as big as the States; India nearly a million and a quarter of square miles; Canada, 600,000 square miles larger than the States, without Alaska, and 18,000 square miles larger with it! An Empire nearly nine million of square miles, with a population of 301,000,000. Shares in such a realm; heirs to such vast and varied privileges, Canadians are not for sale. Political annexation must then remain a bugaboo for disappointed politicians on our side to play with, and a bubble for certain senators on this side to blow to decoy their innocent fanatics at home. But there is an annexation we favor, that of brotherly friendship and political good-will. You have 55,000,000 the start of us. Are you the Goliath, afraid of Canada as a political David? Canada has been a fair neighbor. When Lincoln and Garfield died, the Dominion was in mourning. Whenever any of your men-of-war come into our ports, the citizens rejoice, and give their men the hospitalities of the cities. There are constant reciprocity treaties being made every day in the year between us at the altar of Hymen. At many of our banquets the toast of the President follows that to the Queen. At most of our public gatherings your flag entwines ours. From most of our pulpits prayers are offered for your ruler as well as ours. That is the sort of alliance we do more than you do to promote. We want, too, fair commercial reciprocity, but we shall not take commercial union for it, or bend our necks or our knees for either. Whatever betides, we can both be loyal to our own political countries; we can both be fair, even to our own national and natural prejudices, and while Canadians may neighborly pray "God bless the Republic," may you not in as friendly a spirit reciprocate with "God Save the Queen."

DENTISTS AND ADVERTISING

In the April issue of the DOMINION DENTAL JOURNAL appeared an editorial on this subject in discussion of an editorial which appeared in both the *Ottawa Journal* and the *London Free Press*. There seems to be some difficulty in the mind of even dentists understanding the difference between commodities for sale and rendering personal services. The first may be advertised, the second is a matter of personal skill and attainment, which no one but a boor could flauntingly present before the public. The Oral Hygiene Committee of the Ottawa Dental Society also made reply to the *Ottawa Journal*. The reply is so well taken and so clearly expresses the reason for not using black type in daily papers that we quote it in full:—

"In an editorial comment of the 8th inst., reference is made to the unfortunately expressed remark of a prominent American dentist. The occa-

sion is taken to severely censure the dental profession for failing to educate the public along dental lines and charging it with the crime of keeping valuable knowledge to itself. We are also informed that public access to this knowledge is had mostly through the advertising of tooth pastes, brushes, etc. The inference is that the dental profession should advertise its possibilities through the press. A newspaper is to a great extent a mirror of public opinion, and when a representative newspaper like the *Evening Journal* gives editorial expression to an opinion on any subject there is a reasonable inference that a like opinion is shared by an appreciable portion of the community.

"Herein is presented an opportunity for educational effort in endeavoring to make clear the position of the dental profession in this matter. Why does this profession, in common with other professions, refrain from advertising in the public press? This is a much misunderstood point which deserves elucidation.

"The first point lies in the inherent difference between the sale of material commodities and the sale of professional service. Material commodities represent a stock-in-trade of more or less standardized articles of various qualities and costs which can be marketed to any extent in proportion to the available financial resources of the vendor. Capital, business ability and judicious advertising can expand a commercial enterprise to any desired limit all the while increasing its benefits to the public. Advertising is admittedly a vital consideration in commercial success.

"Professional service is an altogether different matter. It is a personal service rendered to individuals and which cannot be deputed to assistants and retain its value. A piano, automobile or a pound of tea retains its standard value whether sold by the head of the firm or the office boy. The personal equation may enter into the finesse of the sale but not into the quality of the commodity. In professional service it is the personal equation which determines the value of the commodity. The professional man cannot depute his knowledge, skill and judgment to the office boy. When the professional man has attained a full practice he has reached the limit of his production and no amount of capital, business ability or advertising can appreciably increase his power of production. To increase the number of clients beyond this point means that he must either serve only those who will bid highest for his services or reduce his individual attention to each one. Not to render the best possible service to each client is contrary to the spirit of professional service and rightly so.

"The specialist in professional service is the direct result of this problem, one which enables him to concentrate his attention on one particular branch of his profession. This is why professional men who have the best interests of the public at heart do not advertise in the public press beyond a brief notice of name, profession and address.

"In the specific matter of the dental profession, it has been said that there were fewer dentists in proportion to population in Ontario at the outbreak of the war than in the previous decade. Many towns and villages of around 1,200 population had no dentist and dental service was at a premium. Since the outbreak of the war a considerable number of dentists joined the Army Dental Corps, further depleting the number of available practitioners.

"For some reason or other there is not the same rush of young men into dentistry as toward the other professions, hence the supply is never equal to the demand. Dentistry is an arduous, trying and not over-healthy occupation. It calls for the knowledge and judgment of the physician in the treatment of disease and the skill of the trained mechanic in the performance of its operations. It is at once a science and an art. Moreover, its rewards both social and financial are not yet equal to those of the older professions and these are very important considerations with a young man in choosing a profession. The dentist does not need to advertise, for if he be sober and industrious he will not want for patients.

"Regarding the education of the public, the editorial in question shows a lamentable ignorance of the work of the profession in Ontario during the past ten years. Each society has its Oral Hygiene Committee which is always ready to provide lectures and lantern slides for educational purposes. Hospital, school and public clinics have been established in the larger cities. In most cases these were carried on at considerable expense by the dentists themselves until their great value convinced the various municipalities that such should be a matter of public expenditure. No one, outside of the profession, knows of the efforts put forth, the disappointments, the public apathy, the discouragements and the difficulties with which we were confronted. What this work cost us individually we would rather forget. Had it not been for the intelligent sympathy of a few men in executive positions we would have accomplished little, and but for men like Dr. J. H. Putman we would have failed. Some years ago we offered to supply weekly notes on Dental Hygiene to the city papers, but the effort met with slight encouragement. We could not afford to pay ad. rates in addition to the sacrifices already made in the public interest, more especially as the demand for our services was already greater than our ability to supply. The Oral Hygiene Committee is willing and ready to contribute copy to the newspapers if required, and will also arrange for illustrated lectures before educational or other bodies if requested, without charge. We maintain a lantern especially for this service. At the outbreak of the war the dentists of Canada made it possible for thousands to enlist who would otherwise have been rejected. Sometimes we were paid, oftener not, and we would do it again if necessary, but the establishment of the Army Dental Corps has solved the problem. This splendid branch of the service is the result of nearly twenty years of hard work on our part, and the

practical common-sense of the Minister of Militia on the other. The Army Dental Corps has placed tens of thousands of men on a service footing, and is adding appreciably to the efficiency of the men in the field. It has been estimated that 10 per cent. of an army was continually inefficient through dental causes. We have reduced this considerably already and expect with our improved establishment to reduce this item to two and one-half per cent. Is this not good patriotic service? Is it not also good public education?

"It would only be fair to mention that the first hospital clinic in Ottawa was due to the generosity of Lt.-Col. J. W. Woods who supplied the outfit. The members of the Ottawa Dental Society carried on this work for six years at no small personal inconvenience. There is nothing spectacular in our work, no heroics, just a slow, patient and persistent round of duty. Ours are not knighthoods and iron crosses, just the satisfaction of trying to make this world a little more comfortable by our efforts.

Oral Hygiene Committee of the Ottawa Dental Society: Mark G. McElhinney, Chairman; L. E. Stanley, Secretary; Oliver Martin, Allan Armstrong, C. H. Juvet, W. C. Macartney."

THE ONTARIO DENTAL SOCIETY

The 1916 meeting of the Ontario Dental Society was held in the Royal College of Dental Surgeons, Toronto, May 8, 9 and 10. The attendance was not as large as on former occasions, but the programme was quite up to the usual high standard. The president's address was not along the regular lines of a president's address. He discussed many subjects from a wide sociological standpoint.

The paper presented by Dr. Clappison on "The Treatment of Pyorrhea for the General Practitioner" was most interesting and instructive, and showed careful preparation, besides an appreciation of what a general practitioner should undertake.

Dr. E. S. Best's paper on "The Treatment and Preparation of Root Canal Fillings" was very comprehensive, showing the value of the X-ray in the treatment of filling root canals of teeth. In fact, he made it quite clear that the treatment of root canals is only guess work unless an X-ray photograph is used.

The clinics were not as numerous as they might have been, though they were of very special interest. Clinics are not nearly so satisfactory given in a poorly lighted room.

The address by Major Clayton at the luncheon was by all odds one of the most interesting features of the whole convention. His style of public speaking is interesting, instructive and stimulating. He illustrated the value of the Dental Corps by saying an experiment was made choosing five men with clean mouths and five men with unclean mouths, placing them on the

same rations and same work. While ever plenty of rations were supplied there was no difference in their physical endurance, but as soon as the rations were reduced those with unclean mouths lost in physical endurance. Another interesting thing is that the dental profession have made fit at least 50,000 Canadians who would have been rejected because of the condition of their mouths.

Dr. Giffen's moving picture demonstration of "Impression-taking" was one of the most interesting, unique and instructive features. It is the best demonstration that can be made of a technical procedure, because large audiences can see every detail as it is being done. This part of the programme was held in the Garden Theatre, close by the Dental College.

Dr. Frank D. Price gave a paper on "Ionization Method of Treating Alveolar Abscess," which ought to be carefully read by all practitioners who wish to practice modern dentistry.

Dr. E. W. Paul demonstrated the "Use of Elevators in Exodontia."

SHORTAGE OF DENTISTS IN GREAT BRITAIN

In Great Britain there are no more qualified dentists to-day than there were in 1868, when the dental law was passed. Dentistry is under the government of the General Medical Council, which has begun an investigation into the reasons why there are so few young men entering the dental profession. They sent out a series of questions to the dental schools and qualifying bodies:

(1) To what extent is the deficient supply attributable to the failure of the existing law, as judicially interpreted, to check unqualified persons?

(2) To what extent is it due to the inability of candidates to pass the required preliminary examination in Arts before commencing professional study?

(3) To what extent is it due to the length, stringency, and expressiveness of the courses of professional study and examination required for qualification?

If the points enumerated in the latter (3) be thought to be important factors.

(4) What modifications, if any, are possible in the direction of lightening the present curriculum without impairing the sufficiency of the guarantees for efficient practice contemplated by the Dentists Act?

Nearly all the bodies replying to question No. 1, gave as their opinion that the unsatisfactory state of the law which permitted any person to practice dentistry so long as he didn't call himself a dentist was the chief cause of the shortage of dentists. Quite a number objected to the preliminary educational standard, while they thought that the standard should not be lower than that of medicine, yet they were of the opinion that latin

should not be a subject compelled for matriculation. Not a few pointed out that four years is none too long to complete the study of dentistry, but the excessive cost of education was a distinct barrier to young men entering dentistry. The dental college fees alone is given by the London Hospital Medical College. "The London Hospital Medical College is of the opinion that the present fees for dental curriculum are somewhat excessive. In this college the full fee for the four years' course is £210, whereas the full fee for the five years' course of a medical student is £147. The reasons for this disparity are, it believes, that: (1) the fee for dental mechanics £105, was based on what a pupil apprentice paid to a dental practitioner; (2) in those cases where a dental school and a medical school are not under the same administration fees have to be paid to each institution; and (3) in London, at any rate, dental schools have not received, it is believed, any financial aid from the Board of Education such as has been given to certain medical schools during the past five years."

The dental student in Great Britain is at a great disadvantage in getting his education there, as compared with Canada, where the total Educational fees are less than \$500.00, as compared with \$1,050.00 in Great Britain. We have often wondered what was the real difficulty in Great Britain in connection with dental education and dental practice. In the first place dentistry is governed by the general medical Council, which is not good. Second, the dental law does not prohibit anybody from practicing dentistry. Third, until within very recent times the prospective dental student was required to spend several years in a dental laboratory to learn mechanical dentistry, which he rarely practiced after he became busy in operative dentistry. Fourth, the expense of graduation in dentistry is out of all proportion to the value of the services he can render to the public. Fifth, the dentist who has gone through four years of training, paid very high fees and spent probably half of his time and energy during these years in studying subjects which are of little value to him in practice, must charge such a high fee for his services that there are but few of the public who can afford to consult him. Our own observation has been that British dentists are extravagant livers and not hard workers.

One thing in dental education which strikes one, is the management of the dental school. Nearly all the dental schools are run in connection with the dental hospitals. The hospitals being organized on the same bases as any general hospital and looking to public charity, and government help to defray its expenses. The dental school presumably being run upon the fees of the students. In many of these dental schools there is an attendance of from 100 to perhaps 250 students a year which would amount roughly to \$50,000.00 for a school of 200. To an outsider such a dental school ought to pay very handsome profits. In Canada there are dental schools

who have accumulated upwards of \$200,000.00, in plant in twenty-five years from fees of the students which were less than a \$125.00 a year and paid out of its own treasury the hospital expenses for teaching dentistry.

UNFORTUNATE LEGISLATION

In the dying hours of the last session of the Saskatchewan Legislature an amendment to the Dental Act was introduced and passed by which a dentist who has a license to practice in the Province might employ a man who was not a dentist to practice under the former's name, though he travelled from town to town throughout the Province. The Dental Association in the Province had no knowledge of the amendment being passed until after the close of the Legislature.

A few weeks later a death occurred in one of the dental chairs where these unqualified dental practitioners were employed. Following this misfortune between twenty and thirty dentists had a meeting with the Attorney-General, when they laid the whole facts of the matter before him. It is hoped that at the next meeting of the Legislature this pernicious amendment will be expunged from the Act and unqualified dentists will not be permitted to practice dentistry in the Province. A death occurring under such circumstances surely ought to be sufficient warning to the Legislature to take all necessary precautions to protect the public from unqualified practice.

DEATHS IN DENTAL OFFICES SHOULD BE REPORTED

Within the past two months there have been three deaths occurred in dental offices in the Dominion of Canada. In two of these cases a general anæsthetic was administered by a physician. The facts of third case are not at hand. In both the above cases the newspaper report in the headlines made it appear that the death occurred while the patient was under the dentist's care, while, as a matter of fact, the patients were under the care of the physician. No further information than this has been obtained for publication in the dental literature. The dentist in each case refusing to give the circumstances in connection with the unfortunate ending. Just why dentists are not willing to report matters such as these which are of the greatest importance to other members of the profession we are unable to understand. As a profession we record but very little of our clinical experiences that might be of such value to those who read dental literature.

Editorial Notes

Dr. A. J. McDonagh has returned from a two weeks' stay at Atlantic City.



Capt. Fred Mallory, C.A.D.C., was ten days in the hospital at Salonica.



The dental offices in Lindsay will close on Thursday afternoons during May, June, July and August.



Lieut.-Col. J. A. Armstrong has reported a great success in the services of the C.A.D.C. in France.



Major Clayton's address at the luncheon of the Ontario Dental Society was one of the features of the convention.



The Board of Directors of the Royal College of Dental Surgeons met in Toronto, May 1, 2, 3, 4 and 5, 1916.



Dr. S. P. Reynolds has been elected to the city council of London in a special aldermanic election necessitated in Ward One.



We regret to notice the death of Mr. Capon, father of Dr. F. J. Capon, Toronto, and Dr. W. A. Capon, of Philadelphia.



In the words of Major Clayton, it is not all beer and skittles to organize and direct an Army Dental Corps. There are many bumps from the older organizations.



Dr. F. Furlong, of Hamilton, has taken over the dental practice of Dr. Clarence Higley, Blenheim. Dr. and Mrs. Higley are going to Niagara Falls on an extended visit.



The committee of the Army Dental Fund of the Canadian Dental Association entertained Major Clayton, A.C., chief army dental surgeon of Canada, at dinner at the National Club, on Tuesday, May 9th.



Drs. A. W. Thornton and Jos. Nolin, of Montreal, were present at the Ontario meeting to extend an invitation to the profession of Ontario to attend the Canadian Dental Association in Montreal, September 12, 13, 14 and 15, 1916.

It would seem that there is no provision in the British army for the attachment of dental surgeons, and when the Canadian Army Dental Surgeons leave the shores of England for France they fall under the direction of the Royal Army Medical Corps.



During the Ontario convention a number of members were anxious to find out when post graduate work in dentistry would be undertaken by the Board of Directors of the Royal College of Dental Surgeons. Those inquiring about it would be pleased if the annual fee would be increased and the money used for that purpose.



Because of the uncertainty of the number of candidates which might be present there was no special dental convocation of the Royal College of Dental Surgeons held this year, but the candidates who were present came up for the regular university convocation, May 17th.

Correspondence

CANADIAN ARMY DENTAL CORPS

H.Q. C.A.D.C.,

23 Earls Ave., Folkestone,

April 9th, 1916.

From—The Dir. of Dental Services

To—The President and Members Ontario Dental Association.

Sirs:—The busy routine of our professional and military duties does not leave us much time to write a history of the Canadian Army Dental Corps, overseas, but we feel that something is due to the professional brothers at home, especially on the occasions of your Association gatherings, and we wish this letter to be regarded as an effort on our part to discharge this obligation.

Looking back over the periods of our existence as a Corps, the speculative beginning, organization, and the more or less contentious course we have had to pursue to gain recognition, we are fairly well satisfied, and pardonably proud of our present position.

It has been no small undertaking, as may be judged by the consensus of military opinion early in the game, that the Dental Corps would last about two months. More recent comments from the same source are an admission that the "Darned thing is running."

Yes, it is running, in spite of the universal lack of enthusiasm on the part of the military authorities and in spite of the organized opposition of a sister organization, who might reasonably be expected to render us all the aid in their power. That no misunderstanding may exist, I will qualify the

previous statement and say, that "the vast majority of the medical officers are outspoken in their favorable opinion of the Dental Corps and the method adopted to apply our services to the needs of the troops."

Every new corps must win its spurs, and in pursuance of our orders from the Canadian authorities, "To get results," we have been too busy oftentimes to carry on a fight for the standing and recognition that is our due.

Now that we have been able to show our cold figures, the results of our labors, it is gratifying to find a general expression of approval and interest, which augurs well for the more sympathetic consideration of our material interests as a Corps.

The one outstanding champion and friend of the Canadian Army Dental Corps, at home and abroad, has been the Honorable the Minister of Militia, Major Gen. Sir Sam Hughes. With a foresight which carried even beyond the expectations of ourselves, he recognized the necessity for the Corps, and determined to see that we should have a fair chance to prove our worth. His "Get results, and I will stand by you, boys," has been an incentive to every one of us, and especially to those responsible for the direction and guidance of the Corps, in Canada and overseas.

This must not be taken as an evidence of favoritism, for it is quite essential that any request put forward must bear the stamp of justice and common sense.

"If we are expected to do certain things, we must not be prevented from doing them," surely not a difficult statement to understand, but nevertheless containing the germ of the malady, against which the C.A.D.C. overseas have contended time and again.

It has also been very gratifying to the Director of Dental Services and all connected with the Corps, to find ourselves supported by the almost unanimous approval and good will of the dental profession at home.

This was evidenced by the formation and creation of the Army Dental Fund, which provided the First Contingent going overseas, with many necessary articles, and added to that service by providing the Corps with a contingency fund of fifteen hundred dollars.

This money was truly a godsend to the Corps, overseas, enabling us to procure many needful conveniences, which otherwise must have been provided for by an assessment of the officers, or done without.

This money has been deposited in the National Provincial Bank, Folkestone, and made payable to the joint cheque of the Director of Dental Services, Major Gibson and Major Smith.

Cap and collar badges and corps buttons have been bought, to designate this unit as separate and distinct. The sergeants and men have been housed in a separate billet, and a kitchen and messing outfit provided for their comfort. Various small items bearing a corps' significance have been assumed, looking to the comfort of the men, medical assistance and comforts for the sick, needful accessories for which we had no authority and could not pro-

cure it etc., have been made obtainable, through the kindness and thoughtfulness of the profession at home, who provided this fund.

A little over £200 still remains to our credit, as a witness to our sparing administration.

Since the beginning of this year our purchasing has been placed on a sound basis, with full authority along certain well defined lines.

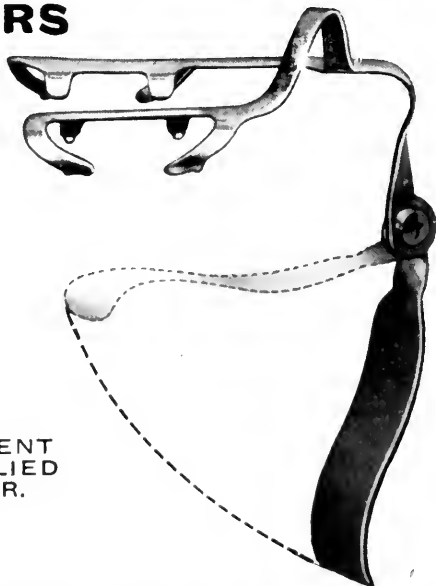
The establishment under which the Corps was organized is working satisfactorily in England, and would, we feel assured, have proved equally as satisfactory in France and overseas, had it not been for the interference previously mentioned, which has dislocated our plans for the adequate care of the troops at the front, *without wastage of time*. Needless to say, the placing of dental officers only in ambulances and hospitals remote from the front, *is productive of wastage*, and neglect of the soldiers as well, for they are not sent back until they are inefficient through dental trouble.

We earnestly hope the authorities higher up may be led to recognize the justice and the expediency of placing the dental services overseas, in charge of those most capable of administering it to the best advantage.

(Signed) J. ALEX. ARMSTRONG, Lt.-Col.,
Director of Dental Services, Can. Contingent.

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Dominion Dental Journal

VOL. XXVIII. TORONTO, JUNE 15, 1916.

No. 6.

Original Communications

TREATMENT OF PYORRHOEA FOR THE GENERAL PRACTITIONER

O. S. CLAPPISON, D.D.S., L.D.S., Hamilton, Ont.

Read before Ontario Dental Society, Toronto, May 8, 9 and 10, 1916

Whether the title of this paper be "The Treatment of Chronic Alveolar Periostitis," "Chronic Marginal Purulent Periodontitis," "Interstitial Gingivitis," "Periodontoclasia," or "Pyorrhœa Alveolaris," or whether this particular streptococcus, or that equally famous endameba, be the specific cause, is not of overwhelming importance at this moment. Koch formulated certain laws, namely:

1. The specific organism must be associated with the disease.
2. It must be isolated apart from the disease.
3. When introduced into healthy animals it must produce the disease, and in an animal in which the disease has been experimentally produced the organism must be found under original conditions.

Until these laws are complied with we have no scientific authority for stating just what the specific micro-organism causing pyorrhœa may be.

We do know, however, that the beginning of pyorrhœa is a gingivitis, the chief feature of *which is traumatism of some sort of the circular ligament*. Constitutionally a lowered *resistance seems necessary to the development of the disease*, and locally the normal attachment is loosened, the soft tissues altered into granulating tissue with more or less pus formation.

CAUSES.

Regarding constitutional causes:

It is the opinion of many prominent dentists to-day that there are no systematic reasons for the cause of pyorrhœa other than those which may predispose to any disease. For instance, Hutchinson says:

"If diabetes, syphilis, tuberculosis, or other systemic disorders are co-incident with pyorrhœa, the pyorrhœa antedates the constitutional disorder, and has been accentuated but not caused by such disorder, and if the mouth

has been under proper prophylactic treatment I believe there would have been no pyorrhœa."

Among the local causes are:

1. Deep interlocking cusps in bridge work.
2. Poorly constructed bridge work.
3. Partial dentures.
4. Ligatures, clamps, wedges, etc.
5. Malocclusion of natural cusps, fillings or crowns.
6. Faulty contact points.
7. Any mechanical irritation lodged under the free margin of the gums.
8. Ragged enamel at the junction of crown and root of teeth.
9. Formation of calculus.
10. Uncleanliness.
11. Bacterial invasion and parasites.

Dr. Hartzell says: "Granted that the gingival margins play an important part in this disease. If the gingival inflammations continue, what is the explanation? Is it because the tissues of the gingivæ are less well protected? Is it because the blood supply is less generous than other areas in the oral cavity? Or is it because irritating agents accumulate on the tooth's surface and constantly flow under the gingivæ? The *bacterial* masses on the tooth's surface furnish the *chief irritant*, and the imperfectly protected gum margins permit the irritant to enter the tissues. The blood supply being received from the end capillaries, the return flow is checked by swelling, thus creating a favorable field for bacterial invasion. Every dentist has noticed the low grade gingivitis on the lingual surface of the lower incisors, which because of their position are particularly subject to the accumulation of salivary calculus. The tissues recede, the process is broken down around these teeth, accompanied by comparatively slight inflammatory disturbance, and often no evidence of pus. It will also be noticed that gingival inflammation does not occur on the gum margins of patients who have consistently practised oral prophylaxis on the tooth surfaces, so that the tooth surfaces are free from bacterial and mechanical irritants." We can, therefore, infer from these conclusions that "*clean tooth surfaces and hard gums prevent gingival inflammations.*"

If a disclosing stain is applied to teeth, the enamel of which to the casual observer appears to be clean, in many cases a dark gingival discoloration results, showing the presence of muco-plaque material, and although the patient may insist that the teeth are brushed frequently and effectively, the fact remains that they do not properly manipulate the tooth brush so as to maintain that polished condition of the teeth so necessary in the prevention of this gingival irritation.

For a differential diagnosis we have to consider:

1. *Loosening of the teeth* from faulty articulation. A large percentage

of the pyorrhœa we are called upon to treat arises as a result of this condition.

2. Traumatism. Note all ill-fitting bands, faulty contacts, etc.
3. Senile atrophy.
4. Precocious atrophy.
5. Pus exuding from the gingivæ may be due to—
 - (a) Calculus.
 - (b) May be due to an alveolar abscess draining at the gingivæ.
 - (c) To heavy metals, namely, mercury, lead, etc.

PROGNOSIS.

Thanks to the efforts of such men as Gysi, Cummer, Chayes and others the loss of a few teeth does not occasion the anxiety formerly felt.

Modern prosthesis is able to supply efficient artificial substitutes, and in very advanced cases the resorting to prosthesis seems to be the solution of the difficulty and more conducive to the patient's general health. In the majority of cases, however, in which the disease has been correctly diagnosed in its early stages, its etiology plainly recognized, the progress should be favorable, bearing in mind that the X-ray is a valuable adjunct in many cases. The most apparent uses of the radiograph are to show:

1. The amount of bone destruction and absorption around the roots of the affected teeth.
2. The presence of undiscovered blind abscesses which may be discharging at the gingivæ.
3. Absorbed and eroded roots.
4. Excementosis.

TREATMENT.

Let us become reconciled to the fact that there is no royal road leading to the cure of this disease, but he who wishes to successfully treat this condition might better place his trust in skilful operating rather than in a hypodermic syringe, tablets, or other remedies.

The only "sure cure" for pyorrhœa is "never to let it begin." Too many nostrums are to be had, and are in use to-day, and, sad to relate, too many the composition of which most of the dentists who use them are absolutely ignorant. In many instances more beneficial and lasting results could be obtained by the judicious use of Epsom salts. But let us get away from this word "*cure*," and stop creating a false impression on our patients. Let us be honest in telling them that we do *not cure their pyorrhœa*, but that we do offer them relief from the acute symptoms, and where possible, put their teeth into a comfortable condition, educating them in proper prophylaxis of the mouth, and have them return at stated intervals for similar treatment. It is obvious that by asking them to return for treatments we admit that the condition has not been cured.

One of the many questions asked the dentist when a patient is informed

of the presence of pyorrhœa is, "Can it be cured?" "Will it stay cured?" by the term *cure* in this connection let us take it that what is meant is—

1. The total disappearance of pus.
2. The filling in and obliteration of pockets.
3. The return of the gums to a normal pink color, becoming hard and firm.
4. A tightening of the loose teeth affected.

Your reply in such cases would undoubtedly depend upon the stage to which the disease had progressed, and it may not be out of place just here to suggest that the time to treat this condition is at the first sign of gingival inflammation, and not when the teeth are loose and pus is exuding from the pockets. When the treatment is instituted the patient must understand that where the teeth are receded, the necks exposed, calculus will readily collect which cannot easily be removed by themselves, and we must impress upon them the necessity of frequent visits in order that the tissues may be kept free from this irritant.

The first requisite in the treatment of pyorrhœa is tooth cleanliness. Each and every tooth must first be freed of all deposits on its exposed surfaces. Roughened surfaces made smooth, overhanging margins of fillings cut down by the use of Smith's files, or similar stones, discs and strips; exposed necks of teeth polished with orangewood sticks, tape and powder, and where possible, ill-fitting crown, dentures, etc., eliminated. It would be advisable at this stage to note all faulty contacts, and where possible, cut a cavity into the tooth or old filling and pack with gutta percha, so that at some future sitting the contact may be restored and a filling with a well-formed marginal ridge inserted in order that the interproximal tissues may remain healthy. This should be done for every patient, whether or not we treat the pyorrhœa.

By polishing exposed surfaces, removing overhanging fillings, etc., before scaling the roots we accomplish several purposes.

1. Gingival inflammation and hemorrhage are lessened.
2. Insoluble powder is not forced into the pockets.
3. Large areas of infection are not opened.
4. If the tissues are very sensitive the application of the iodo glycerole preparation, or other medicinal remedy, will render the tissues less sensitive and more amenable to treatment.

As the writer has stated before, it is a lamentable fact that so few patients possess sufficient digital dexterity to properly manipulate a tooth-brush, and no time spent by the dentist is productive of greater results than that time devoted to demonstrating to the patient the proper technique of brushing the teeth, and having the patient practice this technique until the results obtained are such as will be productive of a more hygienic mouth, and until the operator is convinced that the patient is securing the best possible results. At each visit the condition is noted, and attention drawn to sur-

faces that have not been properly polished, or a *disclosing solution* applied and the patient is shown the condition resulting from neglect to reach every possible angle. It may be necessary to repeat this performance many times, but it must be evident that to a large extent success or failure in this treatment hinges on the ability of the operator to induce the patient to maintain this ideal condition. On the other hand, however, many patients are beyond the persuasive powers of the most convincing practitioner, and it matters not how careful the explanation, or how laborious the demonstration, they either reach home too late at night, rise too early in the morning, or do not go home for lunch. This is the type of patient who goes to Dr. Brown six months after and tells him that although you treated the pyorrhœa for him it is worse now than it ever was.

INSTRUMENTATION.

While the writer knows that the accepted technique of the leading dentists treating this condition is to select one tooth at a time and finish the instrumentation before proceeding to the next, he believes that where the hemorrhage is excessive the better mode of procedure for one not skilled in the instrumentation is at the first sitting for this purpose to remove the larger particles of calculus that lodge just under the gingival margins, and after covering all silicate fillings and porcelain inlays with wax, to use some iodine preparation, such as iodo-glycerole.

As this may not be familiar to all I will give the formula:

℞—Iodo-glycerole:

Zinc iodide	15 parts or grams.
Iodine (crystals)	25 parts or grams.
Glycerine	50 parts or grams.
Water	10 parts or grams.

By slightly modifying this we obtain a disclosing solution:

℞—Zinc Iodide	grs. 15
Iodine (crystals)	grs. 50
Glycerine	drs. 4
Water	drs. 4

Sig.—Paint teeth and rinse mouth immediately. Put in a glass stoppered bottle.

A small quill toothpick, mounted on an orangewood stick, will be found to be most serviceable for applying the iodo-glycerole. At the following sitting the hemorrhage will be found to be much less severe, and in many cases the tissues less sensitive. Where the roots are found to be hypersensitive use silver nitrate 40 per cent. to a saturated solution for the posteriors, and 10 per cent. for the anteriors, and apply frequently where there is no decay. This can be applied with an orangewood stick, care, of course, being taken that the solution does not come in contact with the soft tissues.

The writer believes that he has had some success with Dr. Head's tartar solvent applied every few days where the calculus is particularly tenacious.

Every member present has seen in his every day practice case after case where, because of early extraction of the permanent molars, the articulation has been upset, allowing the stress, which should have been taken up by the molars, to be thrown on the anterior teeth. The lower anterior teeth come into closer contact with the uppers, and the constant tap, tap causes them to become loose and often protruded and separated. Or again, one or two teeth may be receiving more stress than the remainder, and will defy all efforts to treat until by grinding or opening the bite this abnormal pressure is relieved. It is in these anteriors that a splint is most advisable, permitting, as it does, the use of Roach, Gilmore or other attachments. The splint favored by the essayist is made by shaping the cutting edge of the incisors as for a bridge, grinding the lingual to allow for a thickness of gold, drill holes into the lingual surface straddling the pulp, or if devitalized, enlarging the root canal, take an impression of the lingual surface in Kerr's Compound, and make an amalgam model. Swage a gold backing in model, place in tooth, burnish to place, push a threaded post through the backing, remove the solder. Where one does not possess a Chayes parallelo-meter leave the pins protruding as far as possible from backing to remain as an aid in paralleling the posts. When all the backings are in place they may either be waxed and cast or soldered as may seem fit, care being taken to leave sufficient room between the gold and the gingival margin to permit maintaining a polished condition of the neck of the tooth. By attaching Roach ball or Gilmore bar and using the compensating wires, as suggested by Dr. Cummer, a few remaining teeth may be made to render years of service, and the patient supplied with an artificial substitute giving the maximum of comfort. As a temporary splint 26-gauge gold ligature wire, with 30-gauge between the teeth, or waxed silk answers for this purpose.

The very fact that teeth have to be splinted in order that they may be saved makes them a source of frequent infection, and they will need frequent attention from the dentist to keep them in proper shape.

INSTRUMENTS.

It is apparent that the essayist could not give a description of the technical procedure of scaling teeth, nor could any one expert form a set of scalers and by placing them in the hands of every dentist expect them to become competent in their use. Each and every practitioner should select the instruments with which he can thoroughly scale the tooth surfaces without injuring the soft tissues. There are many scalers to be had, and from those secured by the essayist he has selected a few suited to his needs, some of which may be suitable for others.

For the heavier work of removing salivary calculus, or exposed particles of serumal calculus, heavy scalers are needed, together with stones, etc. For

the lower incisors the writer has found a pair of Gordon White trimmers indispensable. Smith's files, Nos. 1, 2, 3, 4, 5, 6, 15, 16, will reach surfaces very difficult of access, and MacDonough's scalers Nos. 12 and 13 are excellent for the exposed roots of the molars; also any surface where a spoon-shaped instrument with both a push and pull motion is needed. An old straight, thin scaler, filed to a chisel edge, used as a push instrument, often gives quick results used between the lower incisors, where the interproximal tissues have receded sufficiently.

One of the most essential requirements in an instrument for a general practitioner is the ease with which it may be kept uniformly sharp. The writer has recently been using a set of planes, designed by Dr. Hartzell, in which the cutting bit is centred with the long axis of the instrument, and are of the plane type, which will not cut unless the plane head or shank is in contact with the surface operated on. The sharpener which goes with the set is very efficient and quick, and it is absolutely impossible to do any of this work unless the instruments are all very sharp, as it is impossible to recognize the differences in the texture of tissue with a dull instrument; hence the need of some device that will permit of uniform sharpening. (Showing device.) This device may be secured separately, and is useful in sharpening scalers, chisels, etc.

With the planing or scaling now completed a final polishing should be instituted, using some fine powder, such as silex, on Abbott's brushes, cuttlefish strips for approximal root surfaces and porte-polisher, wood points and wet silex for gingival area. For a final lustre using whiting with Cutter's floss silk, porte-polisher and wood points.

Finally, brethren, let us keep this old adage ever before us: "An ounce of prevention is worth a pound of cure." Let us drop our policy of "watchful waiting" and get at this problem, each and every one determined that every preventive measure in his or her power shall be used to down this enemy. The results will be fruitful beyond all expectations, and our profession will be lifted another notch toward the high place it will some day occupy.

DISCUSSION.

DR. CROSS: Gentlemen,—I will detain you a very few minutes in telling you what I know about pyorrhœa. I can tell you all I know about it in five minutes, and probably I know as much as the rest of you do about it.

All that is definitely known about the curing of pyorrhœa could be written on the back of a postage stamp. We don't know enough of the genesis of pyorrhœa; but we know too much of the exodus of the teeth. However, I must compliment the essayist on his very excellent paper. He

did not humbug us with a lot of nostrums. Often when we hear papers on pyorrhœa which contain several recipes on its cure, when we come to try them we find them of no avail. I remember a few years ago attending a Canadian dental convention in Montreal, and one of the chief attractions was an expert on pyorrhœa from New York; he gave clinics also. He always had a grand clinic, and he had a most interesting paper and a splendid discussion. He frightened several people, and Dr. Webster knows one man that was badly frightened. He said pyorrhœa was always associated with some grave systemic disorder. Dr. Webster challenged that, and said he knew a man that had it who was as healthy as a young buck. The essayist said no, it was impossible, that there was something that the man didn't know of; and really the next time I saw that man he had lost about twenty-five pounds in weight, and he had to take a trip around the world to recuperate and find out he wasn't as bad as this celebrated New York doctor thought he was. I think what cured Dr. Webster's friend was the announcement in the paper that this celebrated doctor in pyorrhœa had gone in as a specialist in extraction; he had quit pyorrhœa. That was a natural consequence, I suppose, with any man who had been making a specialty of the treatment of pyorrhœa. Dr. Webster knows I am speaking by the book, and he knows the man and all about it. He knows the man that got frightened and got well again. We have not much pyorrhœa in Ottawa, but we are going to have a lot soon. I will tell you why. Heretofore we have had only one specialist in orthodontia, but we have two new ones now. One, of course, in a city like Ottawa had lots of time, and he moved the teeth gradually and gently, and there was no particular force used, and he got fairly good results, and I am sure he is a good man, but when the race becomes keen, when Billy Brown's teeth are travelling faster than Mary Mulcahy's, there will be trouble. Patients used to ask us what pyorrhœa was, and what was its cause. We didn't know, but we would say it was a local manifestation of a serious systemic or constitutional disorder. Dr. Robinson says if these are gum components of pyorrhœa, coming from pulmonary trouble or any of these other troubles mentioned, and we might find they are local manifestations of these other troubles; but if we only knew the cause of it we might treat it successfully. Coming back to the orthodontia, I really believe that pyorrhœa doesn't start, or shouldn't start, there. Why shouldn't it start in every tooth or every mouth? It nearly always starts on the buccal side or lingual side. I can safely say that, because I know as much as anybody about it. I believe that some undue pressure or some injury of some kind is primarily responsible; something that lowers the resisting power at the point of contact is primarily responsible for pyorrhœa, because all teeth are equally exposed to infection. We know it is an infection of some kind. The essayist has said a very safe thing in saying that a clean tooth will not have pyorrhœa. Well, there is part of the margin that cannot be cleansed with a toothbrush, so while

pyorrhœa is more rare with those that indulge in ordinary sanitation, if I may use that term, it is not possible for anyone with an ordinary toothbrush to remove any infection from under the gum. Somebody will invent a sort of rotary household toothbrush which, when you start it going, it will cleanse the entire row of teeth. I think that would be a family toothbrush that would pay.

I have no fault to find with the *modus operandi* or manner of treatment. It seems to resolve itself into this: that we can preserve the teeth for a long period of time. It seems to resolve itself into a matter of personal equation when it comes to instrumentation. Some men are very deft with instruments and some not. Even I myself have saved teeth for many years for those who were wise enough, or foolish enough, to obey me; but if teeth are kept in such a way as to keep the sockets clean and keep the mouth in a hygienic condition, you will not cure the pyorrhœa, but it will be a drawn battle at least, and you can hold it off.

THE PRESIDENT: Is there any other member who wishes to advertise his ignorance on this subject? (Laughter.)

DR. CROSS: If I differ from other advertisers, I hope I was an honest advertiser.

DR. CLAPPISON: Mr. President and Gentlemen,—I had hoped my paper would bring out more discussion. I did not touch the systemic causes of the disease or the relation of the treatment of pyorrhœa to arthritis, which seemed to be a prominent thing in the mind of the medical profession to-day. I don't know whether it has been the experience of others, but it has been my experience that the average medical man will send a patient to you and say: "Mrs. Jones has pyorrhœa, and the pyorrhœa is causing arthritis; take all her teeth out." Well, you just want to stand up to those fellows. They seem to-day to have that as a bogey, like a baby getting its teeth; if they don't know what is the matter with a baby they tell you it has teeth coming through. It is the same way to-day with this arthritis, and a few more things are troubling them, and if they don't know what the cause is they lay it to the teeth. The point that Dr. Cross brought out in regard to the gingival margin, that is just the point to my mind, that is the gist of the whole argument, that you will not get a pyorrhœal infection if you have an unbroken gingival margin. That is where you have got to keep the teeth polished, and you can only do that by the use of instruments and tape. You must keep them thoroughly polished.

LACK OF DEVELOPMENT OF THE TEETH AND RESTORATION

MORVILLE W. RUTHERFORD, D.D.S., L.D.S., Toronto, Ont.

(Clinic at Ontario Dental Society.)

Joe Wistosky, Sam Wistosky—Birthplace, Russia. Age, 15 years and 17 years, respectively.

Family—Father and mother, well; two sisters older, one brother older.

Condition—First case (Joe), 15 years: (Fig. 1.)

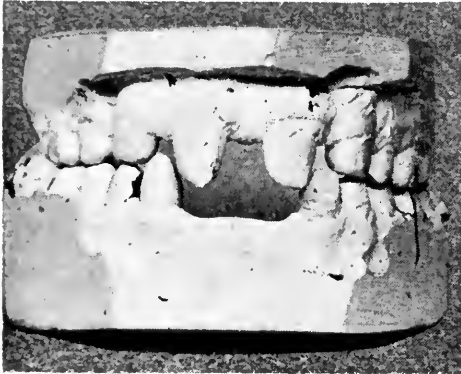


Fig. 1.

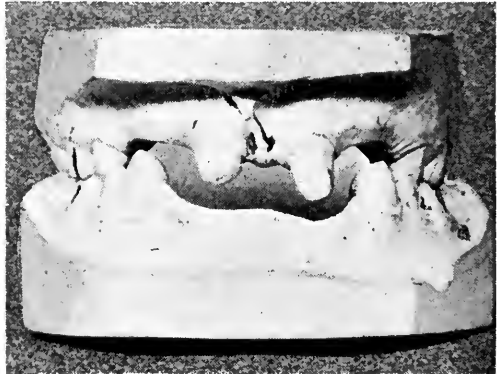


Fig. 2



Fig. 3.

The lower six anteriors are missing, with history of never having any "front teeth," either temporary or permanent. The uppers lack first bicuspid, cuspid and central, both right and left.

The laterals, which are in place, are peg-shaped, coming to quite a point.

Articulation of remaining teeth is very good. The X-Ray of this case was taken side face, as it would show the absence of the teeth, and also the thin layer of bone projecting anteriorly carrying the malformed laterals. The lower, which is not so plain, also shows the thinness of the lower edge. (Fig. 3.)

Joe had measles and smallpox, but they were too late to affect the temporary teeth, so may be ruled out.

A Wassermann done on the parents showed absolutely negative, and it was thought unnecessary to do one on the boys. There was no history of lack of nutrition, ricketts, etc. The very opposite, in fact; mother declaring both boys were always well and strong.

Restoration—In the upper we put a small plate, retaining same by clasps, leaving in the peg-shaped laterals, not for the appearance, but to support the labial plate of bone. Extraction would either break it off or hasten absorption. (Fig. 4.)



Fig. 4.

The lower proved more difficult, the condition necessitating something which would allow of settling and also prevent tipping off the ridge anteriorly.

Half-band crowns were cast for first bicuspid. Roach attachments used with ball soldered to crowns and tube imbedded in vulcanite saddle which carried the teeth.

Second case (Sam), 17 years: (Fig. 2.)

Condition—Lower four incisors absent, upper cuspids and centrals, right and left absent, with peg-shaped laterals as in brother. Also lower cuspids were malformed.

Same history as his younger brother.

Restoration—The uppers being spaced and not noticeable, we do not intend to touch them.

The lower having cuspids in, we will put Carmichael inlays on them and use a fixed bridge of steel facings so absorption may be taken up in later years.

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Dr. W. B. Cavanagh, Chairman	Dr. A. A. Smith, Secretary
" O. L. Weaver	" J. A. Lidell
" W. D. Knight	

ELGIN ORAL HYGIENE COMMITTEE.

Dr. F. E. Bennett, Chairman,	Dr. T. C. Trigger, Secretary,
St. Thomas	St. Thomas
" C. C. Lumley, St. Thomas	

GANANOQUE ORAL HYGIENE COMMITTEE.

Dr. H. A. Parker, Chairman,	Dr. A. H. Mabey, Secretary
" J. A. Black	

GEORGETOWN ORAL HYGIENE COMMITTEE.

Dr. F. R. Watson, Chairman	Dr. F. L. Heath, Secretary
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GUELPH ORAL HYGIENE COMMITTEE.

Dr. Douglas M. Foster, Chairman	Dr. F. T. Coghlan, Secretary
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HAMILTON ORAL HYGIENE COMMITTEE.

Dr. Ernest Kelly, Chairman	Dr. Chas. M. Ross, Secretary
“ J. L. Kappele	“ S. G. Alderson

OTTAWA ORAL HYGIENE COMMITTEE.

Dr. Mark G. McElhinney	Dr. Oliver Martin
“ L. E. Stanley	“ Allan Armstrong
“ W. C. McCartney	“ C. H. Juvet

STRATFORD ORAL HYGIENE COMMITTEE.

Dr. J. A. Bothwell, Chairman	Dr. H. W. Baker, Secretary
“ A. E. Ahrens	“ D. R. Nethercott
“ S. B. Gray	“ E. H. Eidt

SMITH'S FALLS ORAL HYGIENE COMMITTEE.

Dr. C. W. McBride, Chairman	Dr. E. H. Wickware, Secretary
“ W. L. Tait	

TORONTO ORAL HYGIENE COMMITTEE.

Dr. W. E. Wray, Chairman	Dr. C. E. Brooks, Secretary
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REPORT OF THE ONTARIO ORAL HYGIENE COMMITTEE OF THE ONTARIO DENTAL SOCIETY

To the Members of the Ontario Dental Society:

In May, 1915, the following members were elected as the Executive of the Oral Hygiene Committee of the Ontario Dental Society: Doctors R. G. McLaughlin, W. Cecil Trotter, Wallace Seccombe, H. E. Eaton and R. J. Reade. These members, elected at the annual meeting of the Ontario Dental Society, together with the chairman of the several sub-committees throughout Ontario, make up the Executive of the Oral Hygiene Committee for the Province of Ontario.

The committee presents the following report for the year 1915-16:

On June 10, 1915, the members of the Executive Committee met and elected the following officers for the year: Dr. R. G. McLaughlin, Chairman, and Dr. R. J. Reade, Secretary-Treasurer.

During the year five meetings were held.

There are at present fourteen sub-committees working in the Province of Ontario, namely, at Toronto, St. Thomas, Ottawa, Guelph, Stratford, Kincardine, Berlin, Gananoque, Cornwall, Georgetown, Central Ontario, Hamilton, Belleville and Smith's Falls.

The Executive presents the following recommendations to the Ontario Dental Society:

1. That all past chairmen of the Executive should become, ex-officio, members of the Executive.

2. That dental officers in charge of public dental clinics, or school dental clinics, in the Province of Ontario, should become, ex-officio, members of the Executive.

Following the instructions of the Ontario Dental Society, the Executive of the Oral Hygiene Committee made arrangements to hold an Oral Hygiene Conference in Toronto. The convention is for the purpose of showing those who attend the convention the manner in which the oral hygiene work is conducted in Toronto, as in the public schools, in the public dental clinic, and in the hospitals, and as there are always some difficulties that must be overcome before the work can be introduced into the various sections of the Province, one of these difficulties forms the subject of a paper. The delegates then discuss all their difficulties in an endeavor to bring a solution of the matter before the meeting.

This year the conference of the Oral Hygiene Committee of the Ontario Dental Society was held on Tuesday, December 7th, 1915. The delegates assembled at ten o'clock in the morning in the Dental College Building, 240 College street. The committee had automobiles in waiting to take the members to the different points of interest.

The first visit was an inspection of the dental department in Queen Alexandra Public School. The appointments of the operating room were closely scrutinized, and a great interest was taken in the method of keeping a record of the pupils. The principal of the school was kind enough to invite the delegates to inspect the other departments of the school, of which invitation advantage was taken. The morning having been consumed in this work the delegates were taken to the National Club for lunch.

In the early afternoon an inspection of the military dental clinics was made. Capt. Guy G. Hume, in charge of the clinic, received the delegates very courteously, and gave them every opportunity to learn how the clinic was conducted.

On return from the military dental clinic the delegates visited the Toronto General Hospital, where they were received by Dr. John A. Bothwell, chief inspector of the municipal dental clinics. Dr. Bothwell gave a very interesting and instructive interview on the dental work being done in the hospital. As the records are very carefully kept, he was able to give examples of striking results obtained by putting the mouth in a sanitary condition.

Later in the afternoon the delegates paid a visit to the Toronto Technical School, and were conducted, in two parties, over the entire building. There is not space enough at our disposal to describe what was seen there. Only those who took advantage of the opportunity to visit the Toronto Technical School can understand what it is.

In the evening a dinner was tendered to the delegates at the Walker House. Those who sat around the table were: Doctors R. G. McLaughlin, Toronto; W. W. Belcher, Rochester, N.Y.; W. Cecil Trotter, Toronto; J. A. Taylor, St. Thomas; F. E. Bennett, St. Thomas; O. A.

Marshall, Belleville; R. T. MacDonald, Hamilton; C. A. Kennedy, Toronto; A. E. Santo, London; A. E. Rudell, Berlin; W. E. Wray, Toronto; F. R. Watson, Georgetown; W. B. T. Amy, Toronto; Geo. W. Grieve, Toronto; A. E. Webster, Toronto; R. D. Jarvis, London; H. Bannerman, Owen Sound; W. G. Kennedy, Montreal; A. J. McDonagh, Toronto; M. A. Ross Thomas, London; D. Baird, Toronto; Arthur W. Ellis, Toronto; F. C. Husband, Toronto; J. Frank Adams, Toronto; R. E. Sparks, Kingston; J. F. Simpson, Trenton; W. E. Struthers, Toronto; W. E. Willmott, Toronto; H. E. Eaton, Toronto; J. A. Bothwell, Toronto; Horace L. Brittain, Toronto, Bureau of Research; Wallace Secombe, Toronto, and R. J. Reade, Toronto.

After the dinner the Chairman of the Executive, Dr. R. G. McLaughlin, Toronto, addressed the meeting, giving some idea of the work that had been done, and which was to be done.

The main discussion of the evening was as to the relative advantages and disadvantages of the centralized and localized dental clinics. Dr. Harold DeWitt Cross, Director of the Forsyth Institute, Boston, prepared a paper, giving his idea regarding centralized clinics, using the Forsyth Dental Institute as an example. Dr. Wallace Secombe, Chief Dental Officer of the Medical Inspection Department, Board of Education, Toronto, gave a paper, setting the case from the point of view of localized clinics, as in Toronto. Various members took part in the discussion.

Dr. F. E. Bennett, of St. Thomas, set a good example at this meeting by bringing with him Dr. J. A. Taylor, the school inspector of St. Thomas. Dr. Taylor spoke very appreciatively of the work being done by the Oral Hygiene Committee.

All left feeling that they had spent a profitable day.

The reports of the various committees show progress during the year, but on account of the number of enlistments of the members of our committee the work suffered a little in some directions. It appears to your committee that the actual demonstration of the enormous amount of work that it is necessary to do for the soldiers going away should be one of the best arguments for the establishment of dental clinics, so that when the younger generation grows up their mouths will not be in such an unsatisfactory condition as that of most of the present men enlisting.

The reports generally announce that a number of lectures and addresses have been given to Women's Institutes, schools, and Boy Scouts societies. This is a work that can be carried on at all times.

The Central Ontario Oral Hygiene Committee reports progress, and that a number of addresses have been given as a means of preparing the way for school dental inspection.

The Elgin Oral Hygiene Committee reports the appointment by the Board of Education of a nurse to inspect all the children's teeth of the public schools. The report says: "Good results are being obtained, and

the parents are realizing the great benefit derived from such inspection." The secretary continues: "Reports have reached us that other towns in the country are contemplating similar inspection of their schools as carried out here. We have the assurance of Dr. Taylor that he hopes in the near future, when things have righted themselves, that he would make every effort to have dental clinics established in the city." Dr. T. C. Trigger, secretary of the Elgin Oral Hygiene Committee, encloses the following report which he received from the school nurse: "Since September, 1915, I have examined about 2,500 children in public schools in St. Thomas. Of these children about 1,045 have defective teeth; 292 out of 1,045 had no toothbrushes. In many cases I found children using their father's or mother's. I find it needs some one to point out the defects in children's teeth to the parents. Many have said they thought the six-year molar was a first tooth. I have given several toothbrush drills and found that nearly every child did not know how to clean his or her teeth properly. I hope St. Thomas will soon have a free dental clinic. Many of the children cannot afford to have their teeth attended to, and school inspection will have small results until the clinic is obtained."

The Georgetown Oral Hygiene Committee reports that the question has been brought before the Public School Board, and it was urged that an examination of the mouths of the children in the schools be made and that reports be sent to their parents. The chairman of the School Board promised an early consideration of the request of the Oral Hygiene Committee. It was also reported that the dental exhibit charts were now in the school. The chairman reports that "public opinion is strongly in favor of the movement, largely due to the activity and splendid work of your committee in Toronto. We are glad to report some advance in the work this year."

The Guelph Oral Hygiene Committee reports through the chairman, Dr. D. M. Foster, that Dr. Coghlan is at present on service in England, and that he himself is on active service, and expects to leave at any time. The report says: "We were doing our best to get a nurse appointed. This appointment, I think, will shortly be made, as it has been recommended. I have been very much interested in the work of oral hygiene, and would ask that my name, if possible, be kept on the committee for a year."

The Ottawa Oral Hygiene Committee reports that the hospital clinic is being carried on at public expense, and that the school clinic is in good hands and highly satisfactory.

Your committee beg to report that they have prepared a paper for publication. This paper has been accepted by the Agricultural Department of the Ontario Government, and when printed will be distributed by them. The title of the pamphlet is, "Diseased Mouth as a Cause for Ill-Health," by Arthur Day, D.D.S.

FINANCIAL STATEMENT.

Receipts.

Cash balance last statement	\$ 4.20
Bank balance last statement	83.81
Cheque from the Ontario Dental Society	150.00
Bank interest	4.34
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	\$242.35

Disbursements.

Sundries	\$ 3.06
Postage	27.97
E. London, sending out Annual Reports	2.00
Telegraph expenses in connection with Dr. Cross's paper	1.13
Express charges . . . . .	.55
Executive Committee dinners at Crescent Inn, June 10, 1915; October 9, 1915, and May 2, 1916	8.00
Walker House, dinner to delegates at conference	39.90
National Club, luncheon to delegates at conference	22.55
King Edward Hotel, Dr. Belcher's expenses	3.00
R. S. Weir, printing	73.75
Cash on hand	1.49
Bank balance	58.95
	<hr/>
	\$242.35

Assets.

Cash on hand	\$ 1.49
Bank balance	58.95
Dr. F. R. Thomas, Harrisonburg, Va., owing for charts	4.00
Ten sets of dental exhibit charts	35.00
	<hr/>
	\$99.44

Liabilities.

Bills not rendered, say	\$40.00
Surplus of assets over liabilities	59.44
	<hr/>
	\$99.44

R. J. READE, Secretary-Treasurer.

REPORT OF THE ORAL HYGIENE COMMITTEE.

Presented by R. G. McLaughlin.

DR. R. G. McLAUGHLIN: The report of the Oral Hygiene Committee has come under the striking head line of the "Little Red Schoolhouse." Just what relation the Little Red Schoolhouse has to this report perhaps some

of you may wonder, but, first, it is necessary that the formal report be placed before this organization, the Ontario Dental Society, and adopted; and then Dr. Seccombe, who is the chief dental officer of school dental clinics in Toronto is to take up another matter which is of vital importance to this body. I do not wish to take up much of your time; just to present the report to you for your formal adoption, and to say in connection with it, that the oral hygiene work throughout the Province of Ontario is progressing, we think, in a very satisfactory manner. The whole Province seems to have taken a grip of this matter that it never had before. We feel satisfied it augurs very well for the future of the work in Ontario. There are fourteen sub-committees on oral hygiene at work in the Province of Ontario to-day; so you will see that the whole Province is really permeated with this work.

There might be some special mention made of the progress that some societies have made. I might speak particularly of the Elgin Society. The dentists there have taken special interest in this matter, and have been supported by the school inspector of that county, and have made splendid progress. So, also, in other places that are not so large, and not so pretentious.

There are one or two matters in connection with the report itself that might be of interest. This report will be printed in its entirety, and a copy will be mailed to every dentist in Ontario, and you are asked to read and to particularly note the report of the Annual Oral Hygiene Conference that was held last fall in the city of Toronto. I think it was the consensus of opinion of those who attended it that that conference was a real inspiration to the men who were present, and they went back to their own localities with a greater enthusiasm than they had before. We had up for discussion one important subject on that occasion, the establishment of a school of dental clinics. Whether it would be better to have these housed in one central building, or in several localities, was discussed, and a great deal of light was thrown upon the subject.

The committee has also in preparation, and almost completed, a new Government bulletin in connection with oral hygiene. The title of this bulletin is "The Diseased Mouth as a Cause of Ill-Health." It is a timely subject, and the Government welcomed the paper when handed to them. It is now in the hands of the Government, and we hope it will be published and sent out to the teachers, the women's institutes and other organizations throughout the whole Province within a couple of months.

The financial statement as sent in by the Secretary-Treasurer shows that there will be after the outstanding accounts are paid somewhere about \$18 of a balance in the hands of the treasurer.

Mr. Chairman, we thought it wise to make these two recommendations to the society: First, that all past chairmen of the Executive should become ex-officio members of the Executive. You will see the reasonableness of this proposition, as it will keep the past presidents in touch with the Executive Committee, and the committee will have the benefit of their experience. Second, that all dental officers in charge of public dental clinics in the Province of Ontario should become ex-officio members of the Executive. This will make a binding link between all the activities of the Province, no matter where situated, and will likely result in more uniformity of action.

I would move the adoption of the report.

DR. SECCOMBE: Mr. President and Gentlemen,—I have very much pleasure indeed in seconding the report that Dr. McLaughlin has just read. To save time I have put in writing the few remarks I wish to make in connection with the "Little Red Schoolhouse." In a word, it is the object of the Oral Hygiene Committee of this society to endeavor, if possible, to have the members of this convention go back home and do what they can to further the interests of oral hygiene in the rural schools.

THE LITTLE RED SCHOOLHOUSE.

WALLACE SECCOMBE, D.D.S., L.D.S., Toronto.

There is no more prevalent disease in the world to-day than dental disease. It is one of the greatest scourges of modern civilization. It occasions untold suffering and ill-health, and costs the people tremendous sums of money each year.

Assuming that the annual gross receipts of the average dental practice in Canada amounts to \$2,500.00 it costs the people of Canada \$5,000,000.00 annually for the treatment of dental disease and the replacement of lost tooth tissue. Taking the city of Toronto alone, if the annual gross receipts of the average dental practice is \$3,000.00 the people of this city spend \$1,000,000.00 annually as a result of the ravages of dental disease.

These figures, colossal as they are, represent only the direct cost, and are quite aside from the economic loss occasioned through ill-health, shortened lives, loss of time and general inefficiency of the citizens as a result of unhealthy oral conditions.

The Ontario Oral Hygiene Committee has come to the conclusion that the only way to overcome present conditions is to educate the rising generation in correct dietetics and proper oral hygienic habits. This educational work has made satisfactory progress in some of the larger cities of the Province, but the work in the rural districts has not been advanced as it should. Your committee hopes that every member of this society, and every member of the dental profession in Ontario will soon learn to appreciate the tremendous problem of reaching the rural schools of the Province and of the important part each dentist must play in this great work.

The extent of the problem may be judged by the following statistics:

PUBLIC SCHOOLS OF ONTARIO.

	No. Schools.	No. Pupils.	Average daily attendance per school.
Cities	252	117,405	330
Towns	236	64,121	184
Villages	162	25,880	106
Rural	5,327	209,028	22
	<hr/> 5,977	<hr/> 416,434	

ROMAN CATHOLIC SEPARATE SCHOOLS OF ONTARIO.

	No. Schools.	No. Pupils.	Average daily attendance per school.
Cities	113	29,612	178
Towns	78	16,390	143
Villages	17	1,599	70
Rural	299	16,208	32
	<hr/> 507	<hr/> 63,809	

RECAPITULATION—TOTALS.

	Schools.	No. pupils.	Average per school.
Total schools in 20 cities	365	147,017	403
Total schools in 128 towns	314	80,511	256
Total schools in villages	179	27,479	154
Total schools in rural	5,626	225,236	40
	<hr/> 6,484	<hr/> 480,243	

The Ontario Department of Education regulations provide for oral hygiene instruction to teachers in training. Instructions on the care of the teeth are included under the general heading of hygiene, and a sub-heading entitled "Personal Hygiene." The instruction given students in the Normal Schools is, however, so very meagre as to demand a supplementary course.

In so far as the school curriculum itself is concerned, oral hygiene is provided for as follows: Forms 1 and 2—Simple lessons on the care of the teeth. Forms 3 and 4,—More advanced lessons on the care of the teeth, with supplementary reading pertaining to hygiene.

The purpose of the school hygiene syllabus as stated in the regulations is: "To provide the pupil with the knowledge necessary for the maintenance of his health, and to train him to give such attention to the subject as will secure this object."

It will thus be noted that ample provision has been made for oral hygiene instruction in the schools of Ontario.

The Ontario regulations also provide for school medical inspection, school nurses and school dental inspection. With regard to the latter a dental inspection may be undertaken either by the local board itself or in conjunction with other local organizations approved for that purpose by the Minister of Education. In case the latter plan is followed the inspection is placed under the charge of a school dental inspection committee, consisting of as many members of each school board and other local organizations concerned as may be mutually determined.

The school nurse is of inestimable value, and in most cases it will be found more easy to inaugurate medical and dental inspection in the schools by the initial appointment of a school nurse.

From the standpoint of the number of children to be reached the rural problem is of greater moment than the city problem, and it is to the rural phase of oral hygiene work that we should, as a profession, devote our special attention.

In rural districts there is not as great a need for provision for free dental clinics for the poor as in larger centres, and the wider distribution of scholars, in smaller groups, compels a greater reliance upon the school teachers and inspectors.

Unfortunately in many districts the efforts of the dentist to establish dental inspection is entirely misunderstood by the general public, and he is sometimes accused of a desire to take advantage of school regulations for the purpose of increasing dental practice. For this reason it is essential that prevention should be the keynote of every effort that is made.

Periodical dental examination is a boon to poor and rich alike.

The following suggestions are made for the advancement of oral hygiene in rural districts:

Approach the school inspector of your district. It is his duty to see that all the teachers in the district carry out the school regulations.

Interest him to the extent that some dentist will be invited to present the matter to the school teachers at the next county convention. (Usually held in fall of year.)

Urge before the local school boards the appointment of a school nurse.

Have the school nurse or principal arrange for mothers' meetings, to be addressed upon the subject of oral hygiene.

Arrange through the school principal to call a meeting of teachers in the local school or district for the purpose of discussing the problem of school hygiene.

I have here a printed list of the school inspectors of the Province, and if any gentleman present would like to initiate some oral hygiene work in his own district he can see the name of the school inspector of the district.

THE PRESIDENT: You have heard the motion, and it is now open for discussion. Before the discussion is opened I may say an incident occurred in our own district about a month ago. One of the city papers came out with a quotation about a remark of some eminent American dentist at a convention in Chicago, at which he had stated that the mouths of most people were in the condition of garbage cans. On that basis the editor of an evening journal undertook to criticize the dentists very strongly for their lack of endeavor to teach the public regarding dental knowledge, and, in fact, he rapped us over the knuckles, and over the back of the head, and in every other way, in a quarter-column of editorial. This stirred up the dental element somewhat in the city, and a meeting of the Oral Hygiene Committee was called to discuss this wonderful ignorance on the part of the prominent daily paper regarding the work which the dentists had been doing in the Province, and in our own city in particular. The result of that was a column and a quarter of information which we sent in under the authority of the Oral Hygiene Committee, and it was given prominence in the paper, and not only this, but we have had a very excellent description of the work of the Dental Corps, and they have suddenly awakened to the fact that the dentist as a professional man is worthy of some little attention on the part of the public press. (Applause.)

DR. A. E. WEBSTER: I saw the article in question, not only in the Ottawa "Journal," but the London "Free Press" and several other papers. That editorial, I think, was not written in Ottawa at all, and I do not think the one in London was written in London. I think it was copied wholly from some paper in the United States, and fixed up for the occasion. It served the purpose. When I see one of these articles I always take the pains to write a letter with reference to the misconduct of the press in connection with the dental profession. I make it my own business. So I wrote on this occasion a letter to the editor and told him what they had done in Ottawa, as well as in this Province and throughout the Dominion. It came to my mind while listening to the report when these bulletins are sent out from the Department of Education, are they sent to the daily papers and weekly papers, and all the publishing houses, as well as to those named by the chairman of the committee who made the report. I think it quite important they should be, because they claim ignorance on these questions.

DR. BEAN: This is probably the biggest question before the dental profession at the present time. We, as a profession, lay claim to certain things and having brought about certain advantages, but at the same time I think that we have to take a certain amount of responsibility, and a certain amount of blame in connection with certain conditions at the present time. It seems to me in practising dentistry we have been moral cowards in a way. We have been telling the people that a gold filling is worth so much, a gold crown is worth so much, and a porcelain crown is worth so much, and an artificial denture is worth so much, but the rest of the service we are render-

ing is worth little or nothing. Let me illustrate it in this way: I have asked a number of practitioners throughout the Province, practising both in large towns and cities and in the country places: What is your habit in conducting your practice? What do you get, for instance, for bridge work? Well, so much a tooth. Well, supposing those patients are treated when they present themselves? Say \$10 a tooth. Supposing you have roots that have to be devitalized? Well, we don't make any charge for that. Suppose one has an abscess? Treatment included. Supposing it is badly broken down and you have to put down screw posts and build it up with amalgam? The *price* is just the same. The effect on the patient is this: that they consider that they are buying a six-tooth bridge or a five-tooth bridge, or whatever it may happen to be, and they consider these other services that we render at exactly what we charge for them. Now, I am not surprised that people are paying little attention to oral hygiene when the dental profession up to date has paid practically no attention to it. We make a modest charge of 50 cents to a dollar at the outside for what we call cleaning the teeth. What value is the patient going to place on it if we value it at 50 cents? He is not going to value it at \$10. So we have to shoulder most of the responsibility. We have to be bold enough and courageous enough to say that our time is worth whatever we put on it, whether we are putting in gold fillings or gold bridges, or doing this other work. I do not think you can revolutionize things in a minute, but until we put some value on these services ourselves I don't know how in the name of goodness you are going to get the public to put any value on them.

The question of school inspection and how it is going to be handled is a large one, and you cannot solve it all at once. The only thing you can do is to start. I believe in some places that the dentists have volunteered to inspect the teeth of the pupils gratis. I do not know that that is a wise move. It may be for a start to show the conditions as they exist, but to continue it I do not think it is a wise move. You simply are taking away your value; you are spending your time, and creating the impression your time is worth nothing, and the service, of course, is worth the same amount. Inspection alone, then, without following it up with treatment is of little or no use. In our own school I inspected the pupils and I found only two pupils in the whole school that did not need attention of some kind. I have inspected something between 300 and 400 children. You would think that the people would be seized of the importance of the matter when it was brought to their attention, but out of those 300 or 400 pupils I only know of about three or four that acted on the hint that was thrown out when they were told they needed dental attention. It seems to need more than that. There is another point I would like to bring up. I think, as a profession we have been too conservative. I believe even the advertiser has done something for dentistry. I think we are spending time in our offices every day, every week, every month and every year, telling things that the general public ought to

know. I think it is our fault that they do not know. For instance, the first visit that you have from the average child is in connection with first molar trouble, and you have got to explain, and if you explain once in a year you explain a hundred times that that is a permanent and not a temporary tooth. I believe some literature that could be distributed either by advertising or by handing it out in our offices would be a good thing, and it would save us unnecessary time and trouble explaining these things that are almost self-evident. I did not expect to discuss this paper, but I am interested in the problem of school inspection and school treatment. Just how to go at it I am not just prepared to say. I do not know how you would appoint a school nurse in the rural schools. I think this subject is important enough even to have dental inspectors, the same as you have inspectors in the public schools. I am thoroughly convinced the dental inspector would be more use to the pupils and to the public than the average public school inspector. I have been on a school board now for fourteen years continuously, and never once in all that time have we acted on the advice of the school inspector, so I don't know what we are getting out of his services, and I believe that is true of the majority of schools. The inspector says a certain teacher is weak, but we do not act on it, we put up with it till she gets married.

The President put the motion, which, on a vote being taken, was declared carried.

The Secretary read a letter from the Director of Dental Surgeons to the President and members of the Ontario Dental Association.

(The letter referred to appears on page 200 of the May issue.)

DR. THORNTON: I am very grateful for the privilege that has been extended to the strangers without the gates. It is rather a strange feeling for me to be in Toronto and not a member of the Society. I have seen something of the work of the Canadian Army Dental Corps in England and in France, and I have heard something of the complaints. Perhaps they are well founded, and yet would it not be wise to think that the fault was not all on one side. We know the medical men who have gone for overseas service with the Canadian troops; we know they are not all picked men; and if they have not the high conception of the Canadian Army Dental Corps that we would like them to have, is it not just within the range of possibility that the fault is not all with the medical men. It was unavoidable, perhaps, that mistakes should occur in a new organization of this kind, and perhaps it is because of the fact that the medical service has been so long established and has outlived the sins of its early organization, and that ours is a new organization and these sins are very apparent to them that this lack of appreciation has occurred. I want to say from personal experience, however, that I saw the men from this city at service in England—Dr. George Gow and Dr. Fred Mallory—and hour after hour the men from No. 4 would come down to the dental clinic there and watch these men at their operations, and

these operations consisted largely not of filling teeth, but in what we call simple prophylaxis. I met the medical men from Toronto there whom I knew, and with absolute unanimity they spoke in the highest terms of the service of our men, and they used almost the same expression that "it was wonderful to them to see the physical improvement of the men who were treated in the dental clinic, simply due to the fact of having prophylaxis, or, as they say, of having their mouths made clean. The men were infinitely more fit for service than they had been before. I don't know whether the same men correspond with the Toronto papers as those who send the overseas news to the Montreal papers, a man calling himself Windermere, and other men, but those who have visited the hospitals there where any reference has been made to medical service, the very finest things have been said of the dental service which is being done in the hospitals and ambulance corps. I have a suggestion to make that I believe would materially improve the status and the work of the Canadian Army Dental Corps. I presume in Toronto here as in Montreal you have a dental clinic, and perhaps the same course has been followed, and that is, they leave one man in charge of the dental clinic for a month or six weeks or two months, and then he will be sent to overseas service, and then, perhaps, another man totally unacquainted with the work will take charge, and that man will be sent—perhaps men who have not had any training. You could not expect those men would come in and give the best service right at once. I think it is very desirable that in the Canadian Army Dental Corps as in the Medical Corps, there should be an officer commanding each district. It would bring about continuity of service and continual oversight of the service from men who, after a time at least, would have the experience necessary to bring about the best service in our dental clinics in the army, because some severe criticism has been levelled against the service in our camps. Many of the soldiers will not go to the dental clinic because of the kind of service they receive. They prefer to go to the ordinary practitioner and pay their money than have it done for nothing, not because the men are careless, but because they are not accustomed to this sort of work, or perhaps because the soldiers are not paying for it. They are not always as careful in their method of treatment as they might be. Now, if some men of age and experience had control of each military district just as they have in medicine, I think it would be a very great improvement in bringing about continuity of service which would conduce very materially to the work of the Canadian Army Dental Corps.

DR. WEBSTER: Mr. President and Gentlemen: We may look upon this problem for the moment as not of much consequence as we will later on. I really think we ought to seriously discuss and seriously think of the problem before us. The officers in the corps are not receiving that cordial reception from some departments that they think they should get. It may be as Dr. Thornton has said, our own fault, and if it be our own

fault we should correct it, and correct it as speedily as possible. If it be not our own fault then we should aim to correct it just as speedily. I really believe that the officers are not content. They are somewhat in the same position as they were under the Army Medical Service. They were discontented under the service. They are not now content with the status. I can understand quite clearly that the officers themselves have little power to bring about any change. If they do not like a thing they must lump it. We as civilians, if we only knew the desires of the officers, might do something in the way of correction. We can go to the Government, or the Minister, and talk to him plainly, while the officers may not, and that is why I think that their keeping is in our hands, if, for instance, they should succeed we will succeed and get the glory as well as they. So that I believe it is up to the civilian dentists to find out from the officers what they desire, and it is for us, then, to try to make the correction. I really think that the discussion of this matter ought to be taken up at such time during this convention, or at least at a time when we can get from the officer in command in Canada, Major Clayton, what his desires are, and what his complaints are, so that he may not have to express those before this body. You can understand quite well that a committee could best find out from him just what their desires are, or find out, not from him alone, but from others, what their desires are; then it would be a simple matter to make a report to this society and get the endorsement of the society to go to the Government and lay the whole matter before them and try to attain something. I think the Board of Directors for this Province have taken some action along this line. I believe the Canadian Dental Association ought, with this organization, to take a similar view and action, and I believe they will. The vice-president of the Canadian Dental Association is here, and I am quite sure that he would endorse the Canadian Dental Association making every effort possible to bring about as happy a result with as little disturbance as possible.

DR. PALMER: I believe that one great trouble in the Army Dental Corps is that the private or officer can get a pass to go out and get his work done if he so desires. Now, if a private is sick or wounded inside of the camp he cannot go out to be treated; he must be treated by the medical officer there. They won't give him a pass to go out and get any work done; but if a man wants dental work done he can get a pass any time he likes. I have men coming into my office and telling me they would not go to the dental clinic and get their work done. I said, why they are good dentists. Oh, they do it that way, and they do it this way. Now, I said, the trouble is you are allowed to come to me to get it done. If you were compelled to stay in there and get it done you would find it would be done right. I think that is the trouble. They are dissatisfied in that line, and I think if this association would bring about something that would impress the officer in command that the work should be done in the dental clinic on the ground, or wherever the army is, that this dissatisfaction would die out.

DR. BOTHWELL: This is a very important matter, and I think we ought to have a good strong committee appointed to read this all over and consider it seriously, and report after consultation with Major Clayton, or some of the army officers in Toronto. I would therefore suggest that the following gentlemen be on that committee: Dr. Wallace Seccombe, Dr. Harold Clark, Dr. Albert Webster, Dr. Sidney Bradley, of Ottawa; Dr. Allan Armstrong, of Ottawa, and Dr. Kennedy, of London.

DR. L. S. COYNE: I take much pleasure in seconding that motion. Carried.

POST-GRADUATE CLASS IN DENTAL PROSTHETICS

At the request of the Dean of the Medical College of Virginia and for a number of other reasons, the place of meeting of the annual class in dental prosthetics will not be Toronto, but the charming Southern city of Richmond, Virginia, a little over a night's run from Toronto. Following the increased amount of extraction of teeth as shown necessary by the X Ray, and the resulting change in the sanitary and engineering aspect of these mouths, and the design of restorations for these, has led to a remarkable demand for information, especially as touching partial dentures. Dr. Cummer, whose lectures, demonstrations and models in partial dentures are exceptionally complete, and embrace some fundamentals in design new to many, is under arrangement to present this subject in Salt Lake City, Utah; Portland, Oregon; Spokane, Wash.; San Francisco and Los Angeles, California, before meeting the class in Richmond, and subsequent to that, before the Ohio State Dental Society, Dayton, O., December. The course in Richmond will be given in the early part of August, and will be an opportunity for those interested in the prosthetic side of dentistry. Those interested would do well to communicate with Dr. J. A. C. Hoggan, care of Medical School of Virginia, Richmond, Va., U.S.A.

LETTER FROM SERGT.-MAJOR CHAMBERS TO DR. W. E. WILLMOTT, RE C.A.D.C. IN FRANCE

Dental Clinic, No. 2 Camp,
Havre, France, April 23, 1916.

Dear Doctor:

I am writing you to give you some idea of what the dental profession is doing in France.

I came out here on August 24th, of last year, to take charge of the base laboratory. With me were three other C.A.D.C. sergeants, also three officers, with Captain W. R. Greene, of Ottawa, as O.C. We were the first of the corps to come to France. We found there were about 500 men awaiting us for dental treatment, in this base alone. It was two weeks before we could secure a suitable building and fix it up for us to work in. The authorities were very good to us and assisted us in any way possible. The R.E.'s put in electric light, water, etc. We were accommodated in a large wooden hut, divided into two parts. We were to have one, and the other to be for some English dentists that were coming shortly. Our equipment included three dental chairs, with three working outfits for the surgery, and for the laboratory we had two vulcanizers, each holding three flasks, 12 flasks, one foot lathe and one Ritter electric lathe.

Two of the men with me hadn't very extensive experience in mechanical dentistry, but notwithstanding this fact, the first three weeks we were here we made 127 new dentures and 85 repairs.

The English dentists commenced to work shortly after us. We arranged to divide the camps up equally. We gave certain days for each camp. In spite of our efforts, the number of patients steadily increased, so that it was necessary to increase our staff. In the meantime they were sending dentists up the line, who took impressions and bites for dentures for us to make. After a while it was deemed advisable for the two dental outfits to amalgamate to facilitate the work. We have increased our staff from time to time till at present we have a staff of seven officers and thirty-five mechanics. We make an average of about 52 dentures per day, besides all the operative work that is done.

On January 1, 1916, I was promoted to Sergeant-Major. I have on my staff ten sergeants at present. Several of them are R.C.D.S. students.

Sergeant McCartney, Class 16.

Sergeant Walton, Class 17.

Sergeant Lally, Class 18.

Sergeant Walton, you remember, came over to France with the first contingent. He transferred into the Corps this winter, and came down here about a month ago. There still seems to be plenty of work for us to do, as more troops are coming all the time.

A. CHAMBERS, *Sergt. Major.*

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the DOMINION DENTAL JOURNAL,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, JUNE 15, 1916.

No. 6.

AMENDMENTS TO THE DENTISTRY ACT OF SASKATCHEWAN

Below we print in full the amendments of the Dental Act which were passed at the last meeting of the Saskatchewan Legislature and referred to in an editorial in the May issue of the DOMINION DENTAL JOURNAL under the heading of "Unfortunate Legislation":

Section 24 of the Dental Profession Act is amended by adding thereto the following:

"No by-law, rule or regulation shall prevent a licensed practitioner who has paid his annual registration fee from advertising, in his own name or that of a firm to which he may belong, the professional qualifications of himself, his partners, or associates, or from offering his or their services to the public by means of advertisements; nor shall any such by-law, rule or regulation restrict the manner, form or amount of such advertising."

Section 42 of the said Act is amended by inserting after "other," in the third line, the words "save as hereinafter provided," and by adding thereto the following sub-section:

"Any person who is a graduate of any school of dentistry of any of the

Provinces of Canada, which said school or college, as the case may be, has authority by the provisions of any statute of the Parliament of Canada, or of the Legislatures of said Provinces, to grant certificates of license or diplomas to practice dentistry; and any person who is a member or graduate of any association, school or college in the United Kingdom of Great Britain and Ireland, which said association, school or college is by the law of the said the United Kingdom of Great Britain and Ireland empowered to grant a license or diploma to practice dentistry and dental surgery; and 'any person who is a graduate of a school or college of dentistry in any State of the United States of America'; and any person who has a certificate of qualification from the Dominion Dental Council to practice dentistry, may practice dentistry and dental surgery as assistant to a duly licensed practitioner who has paid the annual registration fee, but such assistant shall not be required to pay any fees to the college."

Section 43 of the said Act is amended by inserting after the proviso thereto the following further proviso:

"Provided, further, that a duly licensed practitioner, who has paid the annual registration fee, may sue for recovery of fees or remuneration charged by him in respect of services rendered by an assistant qualified as in the next preceding section mentioned."

Having received a criticism of the editorial from a member of the profession in Saskatchewan we publish the amendments, so that the profession may see for themselves what the Legislature did. If there ever was retrogression in dental legislation this surely should be considered a good example. It is quite clear that it was very hastily drawn, and drawn by somebody who knows very little of dental legislation throughout the world.

In the last two issues of the DOMINION DENTAL JOURNAL there has been some discussion of publicity in the dental profession which might fairly apply to these amendments.

In the paragraph which makes it impossible for the Dental College of Saskatchewan to regulate in any degree the kind of advertising which a licentiate may do, appears this phrase: "Professional qualifications of himself, his partners or his associates." Who may be partners and associates? The second amendment says: "That an unlicensed person may act as an assistant to a dentist." Can assistants be partners and associates at the same time that they are assistants? This is not quite clear. No matter what the amendments say the courts have held that a firm cannot practice dentistry. Individuals do the practicing.

According to the amendments, graduates of dental colleges in Canada which have no authority to grant licenses or diplomas to practice, can act as assistants in the Province of Saskatchewan. By this graduates of McGill and Laval are excluded from being assistants; and then farther down in the amendment it says: "Any person who is a graduate of a school or college of dentistry in any State of the United States of America" may act as an

assistant. Now, just think of an amendment to the Dental Act, made by intelligent men, which will exclude graduates of two of the most prominent dental colleges of Canada, and accept a graduate of any college or dental school in any State of the United States. There are hundreds of graduates who have no standing in the dental laws of the United States who will qualify under this amendment. Then again, in the same amendment appears the statement that "any person who is a member or graduate of any association, school or college in the United Kingdom of Great Britain and Ireland, which said association, school or college is by the law of the said United Kingdom of Great Britain empowered to grant a license or diploma to practice dentistry and dental surgery." Strictly speaking, the L.D.S. of Great Britain grants to the holder only the right to practice dentistry, and use the title dentist, but does not hinder anyone else from practicing, but hinders them from calling themselves dentists.

It is evident that the drawer of this amendment had in mind getting assistants from Great Britain who belonged to some of the unqualified associations, but unfortunately none of these associations have the power to grant licenses. Enough has been said to point out how little of the general subject of dental legislation the drafters of this amendment had.

It would seem that the purpose was to so amend the Act that a dentist who was incompetent or unable, or too lazy, to conduct a successful practice could employ a dentist who had no license to work for him at a less salary than a licensed practitioner, and that he could by the liberal use of advertising make up for what this unqualified practitioner lacked in skill.

There is no more pernicious kind of legislation on the statute books of any Province in Canada than that which permits a qualified practitioner to employ, either in his own office or outside of it, an unlicensed assistant. It is a species of sweat shop methods that belong to general trade organizations. There is nothing to hinder any licentiate from hiring as many licentiates as he pleases; then why should he want to employ unlicensed assistants? There is only one answer: He expects to take advantage of the fact that these assistants have no licenses; in other words, to sell their services to the public at a higher price than they are worth, so that he may get a rake-off.

If such an assistant is competent to practice under a licentiate's name, then he is competent to practice under his own name, and should have a license. There is no possible excuse, or no possible argument, from hindering a man from practicing for himself if he is allowed to practice under the name of another. It is the meanest kind of legislation which will permit one man to use sweat shop methods over another. All dental Acts are put on the statute books presumably for the protection of the public. What possible protection is it to the public to have persons who are unqualified serving the public in every capacity as those who have a license, except that they are doing it under the name of another who holds the license from the Government to do it? Licensed sweat shopping.

FOUNDER OF CANADIAN DENTAL JOURNALISM

The following article was published in the "Toronto World" by W. K. McNaught, a few days after the death of Dr. Beers:

The news of the sudden death of Dr. W. George Beers, of Montreal, came as a shock to his many friends throughout Canada, and few of us could at first realize that the father of Canada's national game had, in what seemed to us the full vigor of his splendid manhood, passed away to the Great Beyond.

At such a time as this, with the memories of over 30 years of close, unbroken friendship crowding in upon me, it is difficult to convey in words which would not seem overdrawn to those who did not have the privilege of knowing him personally, a true idea of his many splendid and loveable qualities. I would, however, fail in my duty did I not endeavor to put upon record something about his unwavering and unselfish loyalty, and try to point out how indelibly he has left the impress of his strong individuality upon outdoor sports, and through them, upon the young men of this country.

Dr. Beers was no ordinary man. Of medium size, but admirably proportioned, and with a face singularly resembling that of the lamented General Gordon, of Soudan fame, he had a personality that was at once striking and attractive. One could not be in his company long before becoming impressed with the fact that he was not only a gentleman in the truest sense of the word, but a man of scholarly attainments, who had seen much of the world, and whose opinions on most subjects were the results of personal convictions rather than derived from others.

EARLY DAYS OF LACROSSE.

My acquaintance with Dr. Beers dates away back to the year 1868, when he was in the heyday of youthful manhood and a playing member of the Montreal Lacrosse Club. The occasion was the great lacrosse tournament held by the Brant Lacrosse Club, of Paris, in that town, and was the first thing of that kind ever held in Canada. I attended as the representative of the old Toronto "Leader," the principal daily paper of this city in those days, and as a consequence I was thrown considerably in contact with Dr. Beers, who was the official referee during the entire tournament. The acquaintance then formed was continued from year to year at the various annual lacrosse conventions in which we both took part, until it ripened into a friendship which lasted uninterruptedly until the day of his death.

Of course every Canadian knows that to Dr. Beers belongs the honor of making lacrosse a white man's pastime as well as Canada's national game. He did not invent lacrosse, nor did he ever claim to have done so. He found it one of the chief sports of the Caughnawaga and St. Regis Indians, and his keen mind saw in it a game well suited to the active youth of Canada, and latent possibilities which could only be developed by the aid of

proper rules and regulations." This work he set about doing, and in the course of time he produced the first laws of lacrosse, which, although altered in some unimportant particulars, are practically in force throughout the playing world to-day.

Later on Dr. Beers wrote his work on lacrosse, a book that has been the foundation of all succeeding works on the game and without doubt the best that has ever been published.

THE TRIPS TO ENGLAND.

In 1875 Dr. Beers conceived the idea of taking a team of gentlemen players, accompanied by a team of professional Indian players, over to Great Britain, and, after considerable negotiation with well-known English sportsmen, the Montreal lacrosse team, accompanied by Big John's team of Caughnawaga Indians, sailed for England in the spring of 1876 and toured the United Kingdom before their return. The game, though new, attracted much attention, and a proof of the wonderful organizing ability possessed by Dr. Beers is shown in the fact, that he was not only able to interest the young men of Great Britain in this, to them, new sport, but brought it to the favorable attention of the nobility and gentry, and even of royalty itself. The culmination of the trip was a royal command to play before Her Majesty at Windsor Castle, which the teams did, being afterwards entertained at luncheon at the castle and presented personally by Her Majesty with cabinet photographs of herself, bearing her autograph.

AN EMIGRATION TOUR.

But successful as was the trip of 1876, it did not satisfy Dr. Beers' ambition in this direction, and in 1882 he set about organizing another trip for the following year, upon a larger and more comprehensive scale, and with higher aims than the former one. His first step was to secure the aid of the Dominion Government, and through the then Governor-General, the Marquis of Lorne and the Princess Louise, the assistance of the Prince of Wales and the British Government. His aim was not only to play lacrosse with gentlemen and professional Indian players, but to utilize the tour to further emigration from Britain to Canada by distributing amongst those who attended the matches, literature about the capabilities and resources of the Dominion. This literature consisted of 500,000 illustrated papers (containing some 50 pages), which had been prepared by Dr. Beers himself, but which was printed and paid for by the Government of Canada. These were all distributed in England, Ireland and Scotland, and the result of the teams' visit in several places was the formation of emigration societies for the express purpose of sending those who wanted to leave the Motherland to Canada in preference to any country not under the British flag.

In addition to these illustrated papers, over 800,000 fly sheets, giving facts about Canada, were scattered throughout the United Kingdom by the efforts of the teams and their friends, so that it may be fairly claimed to have

performed much effective emigration work for this country without a dollar of cost to the Government, beyond the printing of the literature and the freight charges on the same.

BRITISH HOSPITALITY.

The trip was a brilliant success in every way, and many were the public banquets at which members of the teams were entertained, notably at Inverness and Belfast, in both of which cities the functions were officially given by the corporations, and presided over by the Provost and Lord Mayor respectively. In London the teams were banqueted on several occasions, a particularly noteworthy affair being that given by the "Empire Club," of which the Duke of Edinburgh was president. The teams had also the honor of playing before the Prince and Princess of Wales at Hurlingham, and afterwards of being entertained at luncheon by the Hurlingham Club. The success of this trip was largely due to Dr. Beers, for it was only by his splendid organizing qualities that many of the principal features were brought about. Those of us who were close to him in a business way during this long, and in some sense trying trip, can speak with admiration of the untiring energy and the unvarying courtesy with which he treated every one with whom he came in contact. No obstacle ever seemed to daunt him, and he was invariably equal to the occasion, whatever it might be.

ORIGIN OF THE VICTORIA RIFLES.

But, interesting as Dr. Beers' lacrosse career and experiences were, they formed but a small part of his busy and eventful life. His capacity for work was simply wonderful, and in addition to conducting what was for many years the largest dental practice in Canada, he found time to edit a dental journal, contribute articles to newspapers and magazines, and also to take his fair share in the social and political life of the community wherein he dwelt.

An example of this may be found in his military life. Dr. Beers was a young man at the time of the historic Trent affair, and as a result of the excitement consequent upon that episode, which at one period looked as though it would precipitate war between Great Britain and the United States, he and his fellow-members of the old Beaver and Montreal Lacrosse Clubs decided to form themselves into a volunteer rifle company, with Dr. Beers as the moving spirit. The organization thus formed by patriotic Montreal lacrosse players still lives, and no regiment in Canada can boast of a better record than the Victoria Rifles of Montreal, a regiment which has always been closely identified with the lacrosse players of that city. As one of its trusted officers, Dr. Beers always took his full share of regimental duties, and on two occasions saw active service in the field, namely, when his corps turned out to assist in driving the Fenian invaders from Canadian soil.

A STALWART PATRIOT.

Dr. Beers was a staunch Britisher and an ardent Imperialist, and whenever the occasion required he gave forth no uncertain sound regarding the duty of Canada upon national questions. With an intense love for Canada, his native country, he nevertheless believed in Canada as an integral part of the British Empire. His speech at the annual meeting of the American Dental Association, held at Syracuse some years ago, in which he championed Canada against the United States, was a masterpiece in its way, and showed the calibre of the man and his utter fearlessness when he believed himself to be in the right. This speech was published in Canadian papers from Halifax to Vancouver, and was everywhere commented on as one of the ablest and most patriotic addresses ever delivered by any Canadian.

Only a year ago Dr. Beers published an article in the Montreal daily papers on the necessity of teaching the school boys of Canada the use of the rifle. This article contained many original ideas, and received much favorable comment from military men throughout Canada.

OF SPOTLESS REPUTATION.

From the foregoing it will be seen that Dr. Beers was a gentleman not only of ability, but of tireless energy. Indeed in the opinion of many of his most intimate friends, it was this unceasing desire for work that was the principal cause of his untimely death. In whatever he did, he was most unselfish. Money he made, and made it fast, and had he saved it, as many would have done, he might have been a very wealthy man. He was, however, generous to a fault, and controlled by his great heart, as big as the national debt, his purse was always at the command of those whom he regarded as his friends. I do not know how well off he has left his family in a monetary way, but of one thing I am sure, he left them something that they will always be able to regard with pride, "A good name, untarnished by any taint of meanness or dishonorable dealing." His generosity was proverbial. Indeed, I don't think I ever knew so generous a man, and I am afraid that this noble trait in his character was often the cause of considerable annoyance and loss to himself and his family.

A HAPPY THOUGHT.

It has been beautifully said that "To live in the hearts of those we love is not to die," and if such be the case, surely Dr. George Beers will never die to those who knew him, and, therefore, loved him. To the lacrosse players of the 'sixties and 'seventies he was a close and valued friend, of whom they will always cherish the most pleasant and interesting recollections. To the lacrosse players of to-day who know him only by name and reputation, he has been no less a friend, although an unknown one, for to him and his work they are principally indebted for the game they are all so proud of. Would it not, therefore, be fitting and appropriate also, were

the lacrosse players of Canada to join together and raise a fund for the purpose of erecting a suitable memorial to his memory?

Surely the father of lacrosse deserves some such recognition in consideration of the work he has performed for his country and its national game. If the presidents of the two lacrosse associations would take the matter up at once, I am satisfied that the amount could quickly be raised that would make such a memorial an accomplished fact in the near future. Personally I shall be glad to contribute to such a fund, and I am sure there are thousands of lacrosse players in Canada who will be just as willing as I am to subscribe to such a memorial if they are only allowed an opportunity of doing so. We shall honor ourselves and Canada's national game as well as the father of lacrosse by such an action.

December, 1900.

W. K. McNAUGHT, Toronto.

Editorial Notes

Dr. John E. Thompson is home on furlough from Chengtu, West China, accompanied by Mrs. Thompson and family.



We have received from Lea & Febiger, publishers, Philadelphia, Cryer's book on "The Internal Anatomy of the Face." A review of this book will appear in an early issue.



The S. S. White Dental Manufacturing Company having decided to retire from the retail field in Canada, has disposed of its good-will, stock and accounts to a company formed from amongst its Canadian employees, which has been incorporated under the title of "The Dental Company of Canada, Limited," with head office at Toronto and operating branches at Ottawa and Montreal. The officers of the new company are as follows: President, Henry Thompson; Vice-president, James Johnston; Treasurer, Thomas Allan. Mr. J. D. Webb will join the company at the conclusion of his service in the C.A.D.C.

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Dominion Dental Journal

VOL. XXVIII.

TORONTO. JULY 15, 1916.

No. 7.

Original Communications

TECHNIC FOR MAKING IMPRESSIONS AND MODELS FOR ARTIFICIAL DENTURES

By DR. WILLIAM A. GIFFEN, Detroit, Michigan.

Read before Ontario Dental Society, Toronto, May, 1916.

I appreciate the honor and the privilege of appearing before you to discuss what, to my mind, is the most important subject in the whole field of prosthetic dentistry, viz., the basic principles involved in the construction of artificial dentures.

I have not a great deal that is original to offer, but have arranged in detail into one complete system what, in my judgment, are the best points from the various methods employed by other prosthodontists, and which, in my hands, after considerable clinical experience, produce the best results. These I shall present for your consideration. Should I be able to smooth out for those of you who are interested some of the rough places in prosthetic work, I shall feel amply repaid.

To get the best results in artificial dentures, there are three steps which require the same accuracy of judgment and manipulation as that exercised in successful inlay or root canal work, and carelessness in any one of the three steps will invite certain failure to a greater or less degree.

The first of these three principal steps is a correct impression; the second, a perfect model that will remain unchanged in shape until the denture has been vulcanized and cooled; the third, a proper arrangement of the teeth.

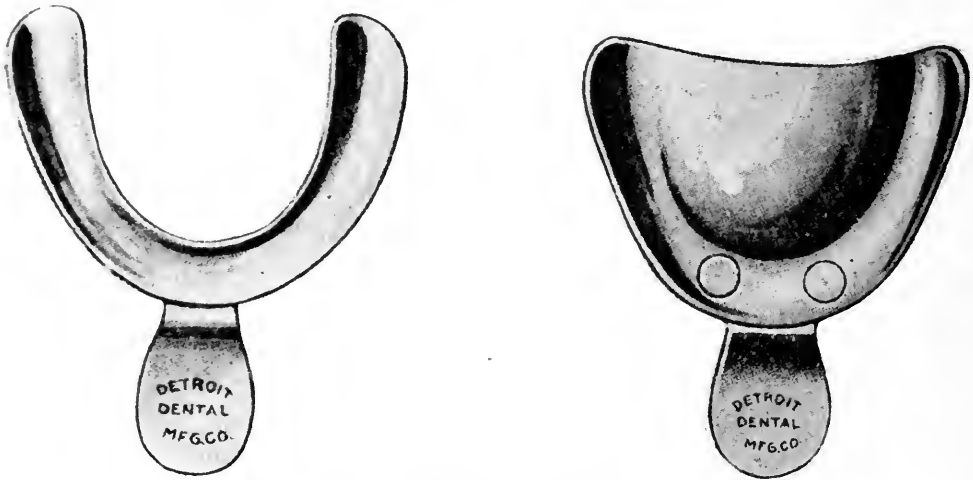
No man should expect to make artificial dentures that will be practically successful until he has mastered a good technic for these three steps.

The most important part of this technic is the Greene method of adapting a plastic matrix to obtain a correct impression of the surfaces to be fitted. We shall, therefore, use the Greene inventions for the purpose of making the work as simple and accurate as possible.

Preliminary impressions and models of each case always should be made. This takes but a few minutes, and the time will be saved or made up later. This gives an opportunity also to judge the temperament of the patient and

his attitude toward the operator, which is very important, especially with referred patients. It also demonstrates to the patient that you are giving the case careful consideration. From the models you can better estimate the difficulties to be met, and you can also fit trays to the preliminary models, which will require the minimum amount of impression material to make a correct impression.

Preliminary upper impressions: Select a Greene Method tray which will easily slip over the ridge, place enough "Perfection Impression Material" in



No. 1. Greene Method Impression Trays.

the tray, moulding it over the inside so the centre will be heaped up, and leaving a slight excess around the rim of the tray; place the tray in the mouth and gently press it to position, and with the finger press the excess up under the cheeks and lip. Take a small gauze sponge wet with cold water and place it against the lingual surface of the tray to chill that portion of the impression; hold this in position and have the patient work the muscles of the



No. 2. Preliminary Impressions—upper and lower.

cheeks and lip over the soft rim of the impression to show approximately the line of muscular attachment.

The preliminary lower impression should be made in the same way, except that the inside rim should be trimmed to prevent it from pressing against the muscles when the patient sticks the tongue out of the mouth as far as possible, thus allowing the muscles and the tissues of the floor of the mouth to press against the plastic inner rim of the impression.

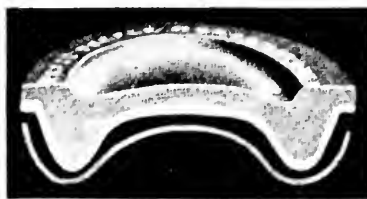
The preliminary models are made by selecting from the Greene ready-made, non-changeable, approximate metal models an upper metal model that will approximately fit the upper impression, and a lower metal model that will approximately fit the lower impression. A sufficient amount of plaster to cover the inside of each impression and the ridge of each metal model is now mixed, the upper metal model is gently pressed to position in the upper impression and the lower metal model pressed into the lower impression; and the excess of plaster which has been squeezed out around the edges wiped off. When the plaster has set, the impressions should be stripped off and



No. 3. Greene ready-made non-changeable Approximate Metal Model—upper.

the models trimmed—being careful to leave the shelf portion which clearly defines the edge of the impression.

You now have models which are about 96 per cent. metal, with a thin film of plaster over them. No model can be made that is less changeable, and they will not warp or break and will stand a great deal of abuse. There is no possibility of squeezing them out of shape by careless packing, flasking

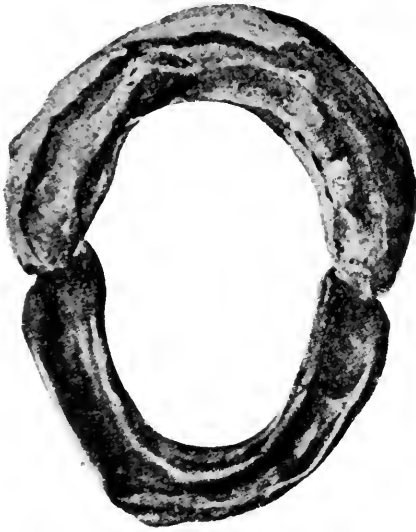


No. 4. Cross section of Model before separating, showing, first, metal tray; second, impression material; third, layer of plaster; fourth, approximate metal model.

or vulcanizing. Also by adding 25 per cent. Portland cement to the plaster, any kind of a metal base plate can be swaged over them perfectly in a rubber block swager. The writer also would suggest at this point that the only safe way to make a cast metal base plate is to make two models for each case, cast the base plate on one model and then swage it over the other model to correct any warping or change in shape which may have taken place during crystallization of the metal.

Trays are now made, for taking correctable impressions, by swaging Ash & Sons' No. 7 soft metal over these models in a rubber block swager.

The trays should be trimmed a quarter of an inch shorter than the finished plate is to be, and the edge or rim should be only deep enough to prevent slipping. The edges of the trays, while still on the models, are opened about one-eighth of an inch with a knife, and are then taken off the models and a beading traced along the edge with a stick of Perfection Impression Material; a wafer of the same material is warmed and spread over the



Upper.



Lower.

No. 5. Preliminary Models and Individual Trays.



Upper.



Lower.

No. 6. Correctable Impressions made on Preliminary Models.

inner surface of the trays, with the excess folded along the edges of the trays. The models are now coated with vaseline or cocoa butter, so the impression material will not stick to them; the impression material in the tray is softened slightly so it can be changed in shape, and the excess impression material on edges burnished up to muscle line on models with the fingers.

All of this work can be done by your assistant, and when the patient comes you are ready with an approximate correctable impression, which can be transformed easily into an accurately fitting test impression that will be correct in height and length, as the denture should be. It has about an equal strain on the hard and soft parts and relief, without a leak, for motion of muscles.

First step. Take correctable impression and pass back and forth over flame from small burner to soften the surface to a semi-flowing consistency, but not quite hot enough to burn your fingers at a touch. Always wet your fingers with warm water, and explain to your patient that it is not hot enough to burn.

Place the tray in position in the mouth and push up lightly. If the roof of the mouth is deep, work the impression slightly forward. When properly seated take a small gauze sponge wet from cracked ice and place it on the lingual surface of the tray, holding it in place for about half a minute; at this time, straighten up the impression material above the edge of the tray all round, but not tightly against the gum, and while the rim of material is still soft, ask the patient to work it down by moving the lips and cheeks. This gives you the approximate height of the impression, and now, with a fresh cold sponge, cool the rim. Now let go of the tray, and if the impression stays in place without any muscular movement to dislodge it, you know it fits the roof and bearing surface of the ridge. This test rarely fails; if it does, repeat the operation of fitting the impression.

Second step. When the rim has been trimmed approximately as to height, warm the rim slightly on the outside, and, with a shaft knife, shave off until the rim is about twice as thick as the finished plate rim should be. Next, trim the distal edge of the plate, leaving it about one-eighth of an inch too long.

The finished denture should be long enough to extend slightly into the soft tissues, but not far enough to interfere with muscular action in swallowing. Warm this thin projecting edge until it is quite flexible, place the impression in the mouth quickly, and have the patient swallow once or twice.

Take the impression out and find the distal edge turned down as far as the muscles have moved it, chill in cold water and trim off to where it turns down. Repeat and trim again if necessary. This valve pressure fit should extend clear around the impression behind the tuberosities. If at any point the rim is short, add as much as is necessary with a stick of impression material.

Third step. Re-test the roof and ridge by pouring a small stream of hot water into the impression and allowing it to run off at the heels. The rim must not be softened, but the centre should be as soft as possible without burning the patient. Quickly insert it and immediately press it lightly and quickly. Repeat as often as necessary until the impression will stand a root fit test, i.e., hang there snugly with no muscular motion to loosen it.

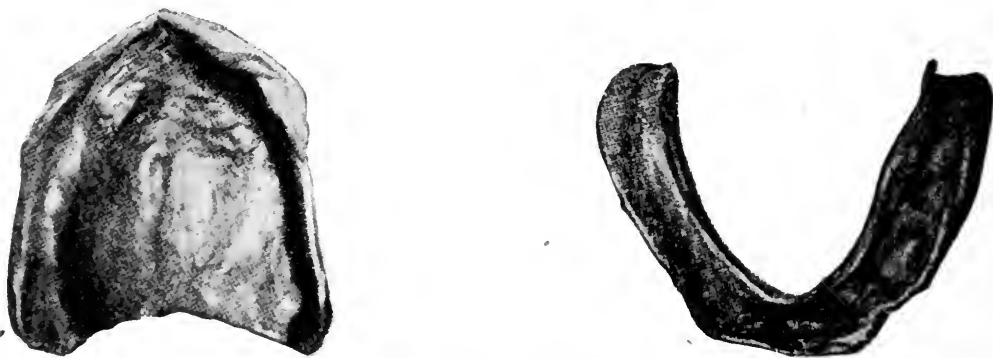
Fourth step. Correct rims to muscles. This is to get the exact height of the plate rim at every point and to get relief for the muscles without a leak. Warm the edge of the rim slightly and pinch it up, making it a little too high and thin at the top; now warm quite soft to a very shallow depth, place in the mouth, and with quick, vigorous movements of lip and cheeks work it down to proper height to fit the moving muscles.

I usually do this one side at a time, until every tissue, hard and soft, has cut its way into this very soft rim, over a hard under-stratum.

Frequently this part of the operation has to be repeated and particular points especially warmed where attachments of muscles are stringy, but persistence is sure to bring accurate results.

Unless individual muscle attachments require special attention, you can trim accurately the impression rim in a few minutes. Continue to trim until the natural movements of cheek and lips fail to cut any deeper into the softened edge.

Fifth step. In conforming the rim to the buccal and labial surfaces of the ridge, gentle pressure must be used on the soft or compressible areas.



No. 7. Tested Impressions.

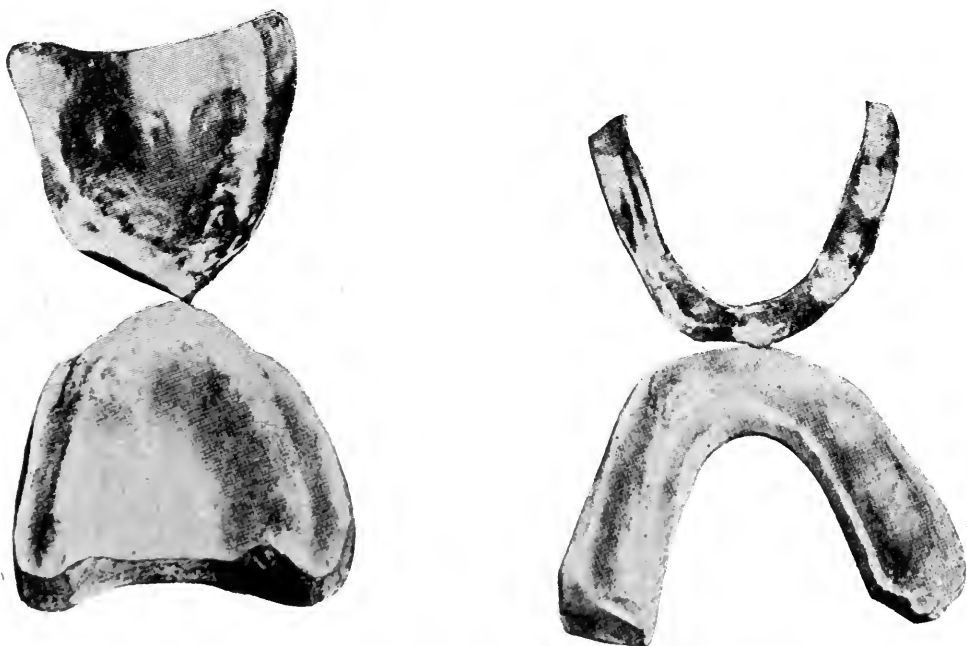
These surfaces are always harder in some places than in others. The work must be done very carefully, as it is of utmost importance in many cases.

Slightly warm the rim of the impression extending beyond the edge of the metal tray on the left side by passing it over the flame, slowly warming it through from the outer side until it reaches about the softness of the palm of your hand; slip it into place in the mouth quickly and as quickly place a cold cotton roll between the cheek and the softened rim, hold the impression in position with the right hand and press gently on the outside of the left cheek with the left thumb and hold it for about half a minute, until the cold roll chills the impression material to prevent rebounding when pressure is removed. The rim is conformed to the labial and opposite buccal surface in the same way. In easy cases, where there is a big mouth and thin lips, both sides and the front can be conformed at the same time. Next, gently warm the heel corners, replace in the mouth, and with cold gauze covering the index finger of right hand, gently burnish around the tuberosities.

Sixth step. Conforming the distal edge of the impression, the most important point for adjustment in the entire operation, slightly warm the edge projecting beyond the edge of the metal tray, place in position in the mouth and instruct the patient to press it up gently but firmly at the back part with the tongue and hold it for a minute, then finish and cool with finger pressure.

In practice, as many of these details may be united as the case and the ability of the operator will permit. However, there is seldom any necessity for being in a hurry, the operation is not objectionable to the patient, and in most cases the patient is as much interested as the operator. I would add that few patients will ever feel satisfied that their impressions are properly made subsequently, unless the same care is used.

Final test. The finished impression is placed in the mouth and the patient is instructed to try to loosen it by moving the muscles of the lips



No. 8. Final Models with metal try-in base plates.

and cheeks, or swallowing, or biting on the finger. If none of these movements throw the impression down, a plate properly made from it will not be loosened. However, if some of these movements loosen the impression, do not hesitate to readjust the part where loosening first takes place. If you do not correct it at this time, the alternative will probably be to remake the denture.

Lower dentures. The first requirement is a preliminary impression and model upon which to swage a tray that will fit the crest of the ridge and about one-quarter of an inch shorter than the denture should be. The same principles should be followed as in the upper impressions.

The outer rim and heels are trimmed to allow swallowing and lip and cheek movement. In trimming the lingual edge for the soft tissues of the floor of the mouth, the edge must be warmed until it is very soft

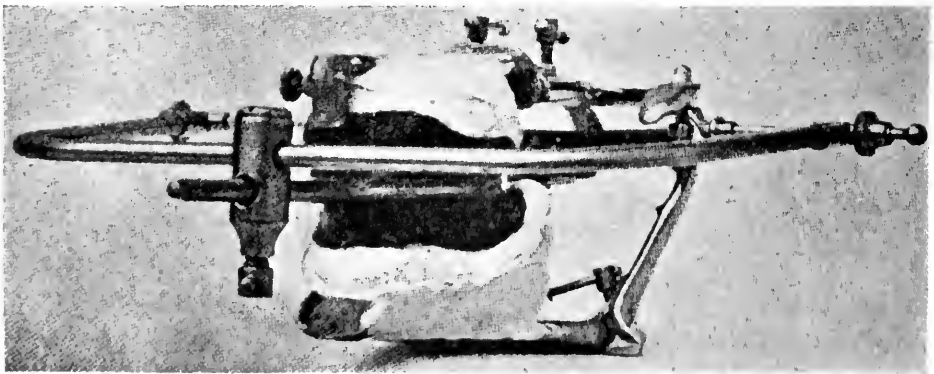
and the instant it is slipped into the mouth the patient must bite down on the rests, swallow and move the tongue all over the roof of mouth as vigorously as possible. The impression is then cooled and the excess material trimmed off with a knife, and the operation is repeated until there is no more excess to turn up.



No. 9. Metal Try-in plates with wax rims built on.

Now conform to lingual surface of ridge by warming until it is quite flexible, and have patient press steadily with the tongue for a minute and finish with cold finger pressure, but don't bear hard nor press downward when retouching.

Test for fit. The impression is thoroughly chilled, placed in the mouth, pressed down with index fingers for about a minute; if it sticks



No. 10. The Bite with articulator representing patient.

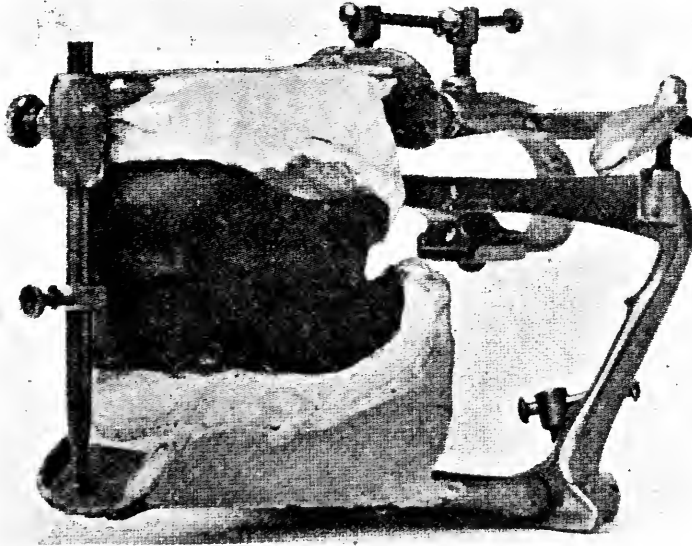
fast, or even if it comes loose with a little noise, it is correct. If not, alter it where it is strained up first. The denture made from such an impression will always test better after it has become properly seated.

Final models are now made in the tested impressions exactly as the preliminary models were made.

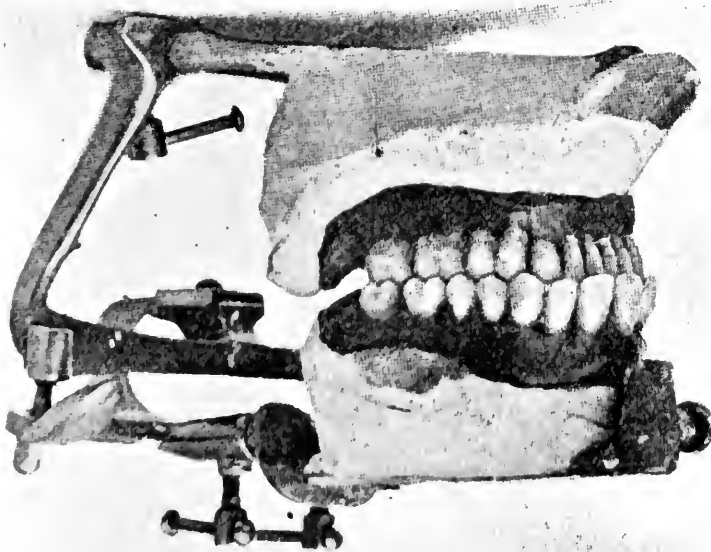
The impressions pulled off and the metal trays cleaned and reswaged to the models, they are now known as bite plates, upon which build rims of base plate wax. The metal bite plates have many advantages. They fit as accurately as the finished plate will fit; the heat of the mouth will not cause them to soften and bend out of shape; they will stay in position;

they require the minimum amount of wax to take the bite; the patient will not object or become impatient while you are building on or trimming for feature restoration.

When the bite has been taken and the face bow attached, they are taken out of the mouth and placed on the models and the models attached to articulator. After the condyle path has been established, and the



No. 11. Try-in or Bite Plates transferred to articulator.



No. 12. Showing the teeth placed in wax on try-in plates ready for a try-in for final adjustment.

median and lip line marked, they are ready for placing the teeth by simply cutting out the wax rims in sections as the teeth are set up. The metal bite plates take the place of the wax base plates. This is also of great advantage; they protect the models from getting daubed up with hot wax; they are exactly the same thickness that the roof of the finished plate is

to be, and the surface shows any ridges or irregularities the roof of the mouth may have. Consequently the plate will have a more natural feeling to the tongue. The plate will require the minimum amount of polishing, and will have the maximum amount of strength in the roof of the plate with the minimum amount of rubber.

At the conclusion of the paper Dr. Giffen illustrated his work by the means of moving pictures.

DISCUSSION.

DR. W. E. CUMMER: It seems to me after considering the literature of our writers and after listening to the address of Dr. Best that the hand writing that appears before the sight of the dental profession to-day spells in no uncertain terms a greater amount of extraction than ever before, especially in offices dealing with the middle class and lower class people. I would like to express the opinion here that I believe the real problems of dentistry are being solved in the offices which attend to these classes. Following this more extended extraction we necessarily have a transformed dental prosthesis, more especially in partial dentures, with a few varied engineering problems to meet.

Regarding Dr. Giffen's paper I find it rather difficult to express myself. I would have come twice the distance to have heard it, but that is hardly the way to say how greatly we appreciate it. I think I speak for every person here present when I say we appreciate fully the sacrifice Dr. Giffen has made both of time and money for the sake of humanity, and especially for bringing those magnificent reels of pictures to our notice. (Applause).

Concerning the retention of artificial dentures in the mouth we have two opposing forces, those that tend to hold the denture in position and those which tend to dislodge it. Of course we have the force of adhesion which varies, and those points have been brought out in a way that has made it very clear. We have to consider the dislodging forces which are brought to play when the action of mastication is going on, and I would like to mention a word more about that later on under the head of anatomical articulation. That means an impression in which the margins must be accurately fitted and in which recesses must be formed to allow these muscles to work and work freely without any dislodging motion or irritation.

Now, with regard to the old plaster impression which many of us have followed, and followed faithfully, we all know perfectly well that after a plaster impression is taken with the greatest possible care we have difficulties to contend with, especially in the upper—perhaps not so noticeably in the lower. Perhaps when he put the impression in the patient's mouth and the attraction takes place around the unfinished denture, when the patient comes in perhaps in a day after we find very serious irritations and as a result we have to cut a little bit off and then the next time we have to file a little

more off, and keep on guessing until we get the periphery to allow the muscles to work freely. Then the other point is when you get your plaster impression so that it will stand a little weight it pulls out the cheeks, balloons the mouth and pulls away the soft tissue, and it stands out about a tenth of an inch and lacks adaptation at the most critical point. With the method that Dr. Giffen has given us, which might be called the Greene method by Dr. Giffen, or I think better still, the Greene-Giffen method, (laughter) we have these difficulties overcome in a scientific, practical and accurate manner, and for the sake of your patients those of you who are not familiar with this method should become so, just as soon as you possibly can, because these results you have seen on the screen do not exaggerate in the slightest degree the results you obtain even in, I might say, a difficult case. I am sure Dr. Giffen joins with me here in expressing before the society my appreciation of the late Dr. Greene in the work he has done for humanity. I scarcely like to leave this subject without a brief reference to anatomical articulation, the principle of which we have seen on the screen. We have seen the practical application there, and of course it means the doing away with taking certain measurements that we are all familiar with, and the doing away with the interfering with the movement of the soft tissues, and those that do me the honor to watch the clinic I will conduct to-morrow will see a further demonstration of this. I do not like to leave this subject without mentioning my appreciation of the magnificent work that Dr. Guisot has done.

I would like to bring up a few points perhaps more or less associated, the first one of which might be a remark or two which Dr. Giffen might choose to make along the line of impressions for partial cases. I think partial dentures are going to be one of our problems in the near future, and I would like to hear Dr. Giffen say something about that. Another point is the use of a thin film of plaster in finishing up a compound impression just before the model is cast. Another point is with reference to the upper case. Probably we are all familiar with that where the lower anterior six or eight teeth have been in position for some time, and the upper being restored by an artificial denture and no basis to them, no teeth back of the lower cuspid. We all know that miserable spongy condition we get in the upper anterior back of the ridge. I would like Dr. Giffen to refer to that if he is so disposed, and also to the condition which is sometimes found in the lower, of a very thin almost knife-like condition of the lower ridge and perhaps a flabby condition obtains at that point. In conclusion I would like to again express how inadequate I feel myself to be trying to tell Dr. Giffen how much we appreciate his kindness in coming here.

THE PRESIDENT: As we have to leave the theatre in a few minutes I will ask Dr. Giffen to close the discussion.

DR. GIFFEN: Mr. President, Members of the Ontario Dental Society

and Dr. Cummer. I want to thank you for your courtesy and for the good time I have been afforded since coming to your city.

I did not suppose Canadians of later years were addicted to the use of so much "jolly." However, we all like a little of it, and I accept it in the spirit in which it has been given.

We had Dr. Cummer in Detroit last month at our State meeting, where he gave the finest clinic on partial dentures it has ever been my pleasure to see. (Applause). I believe him to be a most wonderful teacher of the principles of constructing partial dentures. A member asked the question: "How much is that work worth?" I have never answered that question in this way before, but in this case I made arrangements with the patient (who was amply able to pay any fee within reason) to charge her one hundred dollars.

About this time there was such a demand on my time from various dental societies to give clinics demonstrating this technique, that I conceived the idea of having motion pictures made to show this work, believing that it would be more satisfactory in every way. I selected the patient shown on the screen for the reason that although she was 82 years old, I believed she would be a good subject, and when I explained to her that I wanted her to act her part for humanity's sake, and told her that for any inconvenience I might cause her, I would not charge her a fee for her dentures, she cheerfully consented.

Now as far as the fee is concerned, I believe that as a rule the dentist after having an opportunity to build his practice is paid all his services are worth.

The point I want to make is this, there are but two ways of performing dental service, the right way and the wrong way. If you perform a service of any kind for any patient, it should not make any difference what fee you are getting, you should do your best, or not work for the patient.

If I were starting out to-morrow to build a practice, I would follow this definite technique, improving it whenever possible, whether working for a small fee or for sweet charity's sake, would make no difference. If you follow those principles, you will build a lucrative practice, make friends of your patients, and die regretted.

Regarding partial dentures the same principles should be followed. Preliminary impressions and models of each case always should be made. From the models you can better estimate the difficulties to be met, and you can also fit trays to the preliminary models which will require the maximum amount of impression material to make a correctable impression. Build rests of modeling compound on correctable impression to replace missing teeth, making them a little higher than the remaining teeth.

We are now ready to make a test impression by slightly warming the compound, which covers the portions of the mouth to which the denture is to be adapted by placing it in position in the patient's mouth, and having

the patient bite down hard on the rests, as it is absolutely necessary that the denture must be properly seated when the stress of mastication is placed upon it, consequently the impression should be made under stress.

When impression is made take a metal tray large enough to cover the remaining teeth, oil inside of tray with vaseline, place enough plaster in the tray to take impression, and press down until tray bears hard upon the compound rests on test impression and hold steady until plaster hardens, remove tray, then cut off plaster in sections, place test impression in plaster in proper relation, wax all together. Make your model and you have a proper foundation upon which to build your denture.

If the same care is used in finishing contact points between artificial and natural teeth, preserving inter-approximal spaces between same and in keeping away from gingival margins of natural teeth no matter where located, and arranging the artificial teeth with the same care regarding occlusal antagonization, the cases requiring mechanical retention longer than a reasonable time to allow the patient to become accustomed to wearing the denture or dentures will be found to be the exception rather than the rule.

With regard to those cases Dr. Cummer speaks of, where you have a flabby ridge of connective tissue which in all cases has a tendency to swing the denture out of position, administer nitrous oxid and oxygen to patient and remove the tissue surgically.

In those spongy cases after you have made your test impression, scrape out some of the modelling compound over the spongy area and fill in the cavity with melted compound, and replace the impression in the patient's mouth and apply pressure or use a little creamy plaster if you prefer.

There can be no objection in placing a film of thinly mixed plaster over the inner surface of the tested impression and pressing it to position in the patient's mouth. If you care to use plaster at all, that is the proper way to use it, as you have a proper matrix to confine the plaster, besides if you should have any deficiencies in your impression the plaster will fill them in.

In closing I would like to add that if you pay attention to details, this technique I have attempted to demonstrate to you this afternoon is not difficult, and I know there is not a dentist present who could not become expert in a short time.

I thank you for your attention. (Applause).

RAMBLING REFLECTIONS

J. G. O'NEILL, L.D.S., D.D.S., Fort William, Ont.

Read before Thunder Bay Dental Society, May, 1916.

It is the season of the year when our spirits should be most buoyant as we are truly in the happiest of the four seasons of the year. Every leaf is bejewelled with dew. Every blade of grass is glistening in the morning sunshine. The half opened flowers, purple, yellow, and white, are shyly awakening from their winter sleep beneath the whitened trunks of the apple trees. They seem to come up to earth with their hands folded—their tribute of prayerful praise to their Creator. The poppies and the pansies are nodding "Good morning" to each other all along the hedges and in the long grass at the rear of the orchards. In every tree there seems to be a singing bird, in every bird there seems to be a superabundance of the exquisite joy of living, to judge from the delicious thrills of melody, and the answering echoes from every part of the garden. Robins in their best spring suits are tumbling and turning around a poor lonely worm. Twittering swallows are bobbing in and out of the trees, and the robin red breast, gorgeous as a major-domo, is eyeing the perky swallows with haughty stand-offishness. The pink petals of the fruit blossoms are scattered over the dewy grass, whilst those that have not fallen are blushing coquettishly with their beautiful neighbor, the cherry. What a sight! Long sweeping branches of immaculate blossoms—a white dream where even the shadows only touch the delicate of pink with just a suspicion of the palest green. This cherry orchard is one of the loveliest sights in the world. Look at the bees. They have been looking for the sun to open the beautiful bunches of blossoms, and now they will be in and out all day taking their toll of the honey and in return setting the fruit. We hope they will reach home safely with their burdens before the sun sets; for there is just a risk of their being nipped by Jack Frost on a May evening in spite of the promising warmth of noon.

In the woods the ferns are beginning to uncurl from among the moss and dead leaves. Star flowers are shaking out their delicate blossoms—veritable wind flowers, as they nod and sway in the breeze. May flowers open in sheltered nooks where the sun can reach them, and in the field the dandelion is fringing the way with gold. Is there anything so lovely, so enheartening, so promising as a spring morning?

The line of least resistance has dominated my thoughts in the choice of a title for this paper, as it permits me to ramble along in my reflections, within an unlimited scope, with perfect liberty to discuss and treat any thoughts that may take origin in the brain cells—and it does not confine me to any one subject or any one group of thoughts.

It is possible that you may see between these lines some similarity to the work of the bee. This most interesting little insect with vacillating

rapidity sips the ingredients from the brightest flowers, storing up toll to make the honey. He first selects this flower, then another and so on, and to the casual observer he seems to light and then fly away, only to re-light on another flower—and one is constantly wondering where he will collect his next toll. He seems to have no regular routine in this part of his work, only coming in contact with the flower as the impulse moves him. In this respect alone does this scribe seem to resemble the bee. There is skipping, hopping, and discussion of thoughts with absolutely no degree of organized routine; but only have they been dissected in the brain cells as they came to their origin, and treating them in the form of thoughts and later transcribing them into words with the hope that they might be a means—in only a small way—of assisting you, my good friends of the dental profession. It may be a means of helping you to cope with problems that may or have crossed your path, while you are working and assisting human beings to the higher ideal in everything pertaining to their dental organs and oral cavity. Like the bee, I hope I have chosen bright thoughts for your reflections—as he chooses the bright flowers to extract the ingredients that makes up his production.

Too many men have the double standard in living—the standard by which their lives are governed, and the standard they set for the profession, trade, class or group of which they are members. You may conclude from this that the ideal is rarely illustrated in practice. Abraham Lincoln declared “that the Lord must surely love the common people, as he had made so many of them.” And it is this same common average class that makes this country what it is. For not only is this class the most numerous, but it is the element from which the men who lead—the great creative and administrative genii—are apt to come.

The race is not growing from the top downwards, but from the roots upwards. This is peculiarly true of a people whose institutions admit of no favorite classes. If we could speak of “classes” in this country, we might observe that the lower class of to-day become the middle class of to-morrow, while from the middle class the upper class is constantly being recruited.

Now the future of dentistry—like medicine, or any other branch of human service—depends upon the degree and the extent of its usefulness to the human race. A part of this service consists in the scientific investigations and in the successful performance of the occasional rare operation; but by it will finally be measured, and its fruits are the service the average practitioner renders the average patient.

The general public knows little and cares less about the ethics preached in dental colleges, and amplified in dental meetings. The laity passes judgment on the operations that the dental profession do, the reasonableness of the fees and the consideration it receives at the hands of the profession.

It is not an exaggeration to say that every dental operation done of any character—of all the versatile ones that may be done in the profession of dentistry—helps to build up that great force called public opinion, and determines in part the estimate in which the profession is held.

The members of the dental profession can scarcely see how dental treatment should ever be thought to be a luxury—still with some people there is just this danger, and once an impression of this is engendered in the minds of the people, it is somewhat difficult to eradicate. It should scarcely be thought that the profession need to launch propagandas to break down any prejudices which might have created the thoughts in the minds of the people that dental service is a luxury—as at the present era it is not to be thought that there is any other service which is being given to humanity that is a more popular or beneficial one than that which is being performed by the dental surgeon.

The members of the profession must ever be on the “*qui vive*” in the matter of launching movements to help educate the laity to the importance and the necessity of dental service. There has been a vast and progressive wave in vogue within the last few years, which has been most gratifying to us for the manner in which the laity has responded to the efforts on our parts; but there is much to be done yet, as we all should feel that this immense campaign is only in its initial stages. We in our generation may never see the full fruits of this work; but if we are up and doing and ever willing and ambitious to help disseminate this worthy cause, we shall have the extreme pleasure of knowing that our efforts expended along humanitarian lines have borne good fruits; and as time flies along the harvests to be reaped will always be more bounteous.

While we are carrying on this campaign of enlightening the laity of the importance of dental treatment, we have a duty as individual dentists to perform, and it is this: We in our professional work are trying to impress the ideal on the great mass with whom we come in contact in our educational movements; and while we are so doing we must ever remember that in order that this educational work may impress and take root, and be transmitted from one to the other amongst the laity, that it behooves us not to allow ourselves to get into ruts and remain there; but if our work is going to bear much fruit we must ever keep before us our highest ideals in every relation to our professional life, as we must ever strive to rise a little higher than we ever were before: because this is most essential, as in order that we may maintain a high standard we must necessarily progress in our profession in keeping with the progression that is being made against the people that we are endeavoring to enlighten. If we expect standards to be raised among laymen in their regard to dental services in particular, and the dental profession in general, we must ever keep raising our own standards with no letting up—as in order to have people rise we must necessarily rise with them.

One of the most popular and progressive movements along educational and humanitarian lines has been the establishment of the Canadian Army Dental Corps. It enables the dental profession to reach all classes and stations in life. The higher classes we were not so anxious to reach—as they to a great extent realize the importance of dental services; but the rank and file of the army we should never have been able to reach had not this corps been established. But to-day these men in the army are receiving dental treatment by the army dental surgeons, and all the possible enlightenment is being given them so that they may appreciate how essential it is to their health and economic value to their country that their dental organs and mouth be in a good healthy condition; and now the best possible results are accruing from the work being performed by the men who have joined that corps which is representative in the army of the profession of which you are a member. When this war shall have ceased and all these men go back to their peaceful civilian pursuits, they will have learned many lessons in a dental way which shall greatly benefit themselves and be a shining light in the crest of the dental profession, the world over.

The average man may be taught the importance of good dental work; but the average man has a family to provide for and the interest to pay on the mortgage; and when the choice comes between food for the table and expensive dentures to masticate with he may prefer the food and struggle along without dentures.

The laborer is worthy of his hire, of course; but suppose his wages are such that there is little demand for his services? What dentistry needs to-day is a more economical basis of adjusting fees along ethical lines. By this is meant that we cannot expect the laborer on a small wage to be able to pay the same fees as the plutocrat—yet is his cause not as just as that of the man with a million dollars? We should strive to give—as far as possible—to those of the plebeian class who are not any too well blessed in a monetary sense the best possible treatment we can; and if you have to lower your fees somewhat in order to do good dentistry for them, never let the thoughts cross your minds that you are perverting all your ideas of ethical fees; but rather let the thoughts cross your minds that you are assisting in a great humanitarian work; and if such be done with the spirit pertaining to the idealistic, you shall have the supreme satisfaction of feeling and knowing that you have contributed to the noblest cause in the world—the betterment of the human race.

The modern public insists upon looking into things that concern them. They want to know why. No longer is mystery impressive. Silence may be misinterpreted. How a tooth is treated, the principles of cavity preparation and the nature and character of a filling material can be made as interesting to a patient as any other story, because it is a recital of a bit of the world's history—the battle of brains with natural forces.

There are "family physicians" and there are "family dentists." Is there any reason why the latter should not use their opportunity of educating the heads of the family in the requirements of dentistry for their children? A false sense of propriety may forbid, but it is not a kindness to leave patients in ignorance, when through this their children may suffer.

These times do look depressing, but look for the bright things and chase the depressing spirit away. Cultivate the bright side. It is the right side. The times may be hard, but it will make them no better to wear a gloomy and sad countenance. It is the sunshine and not the cloud that gives beauty to the flower. There is always around or before us that which should cheer and fill the heart with warmth and gladness. The sky is blue ten times where it is dark once. You have troubles, it may be; so have others. None are free from them; and perhaps it is as well that none should be. They give sinew and tone to life, fortitude and courage to man. It would be a dull sea, and the sailor would never acquire skill where there is nothing to disturb its surface.

It is the duty of everyone to extract all the happiness he can within and without him; and above all he should look on the bright side. What though things do look a little darker? The lane will turn, and the night will end in broad day.

CEMENTATION OF CROWNS, BRIDGES AND INLAYS

HAROLD CLARK, D.D.S., L.D.S., Toronto, Ontario.

Read before the Ontario Dental Society, Toronto. May, 1916.

Mr Chairman, Ladies and Gentlemen: The chairman of your programme committee evidently does not believe in voluntary service, he is an out and out conscriptionist. He called me up one day and said he wanted me to be one of three to discuss the matter of cementation of crowns, inlays, orthodontia appliances, and the like. He asked me if I would take up the matter of crowns. I said I was willing enough, but that I had nothing new to tell any dentists, or I might say hardly any student. I just mix the cement in the ordinary way and put the crown on. He said he would either get somebody else or let me talk about something else. Anyway he told me to think it over. I said I would think it over, and I did, and the more I thought of it the more I agreed with myself, but the next thing I knew I was on the programme. The other two men, I know who they are, but I don't see either of them here. They have done what I thought of doing. (Laughter).

Now, fortunately, I have a good excuse to make my remarks brief. It is nearly time for us all to go.

With regard to the cementing of crowns do not expect, gentlemen, that I am going to tell you anything you do not know, but I will have to say something now that I have got up here. You all know what a stench you encounter practically every time you take off a cemented cap, and the more cement you find in that cap the higher the voltage of the stench. Now, for that reason and many others I have always tried to follow this rule as closely as possible. I build up that tooth with amalgam and if necessary use screw posts, or some kind of posts, and then build the amalgam around the posts so that when I cement the crown on I shall require nothing but a film of cement. Sometime ago I saw it recommended that we use that black copper cement. Well, naturally one rather shrinks from using that black copper cement even though it is hidden beneath the beautiful gold, but when Caulks brought out that white or light colored copper cement I used it, and I have had occasion to remove a crown put on that way, and I want to say that there was no, or practically no offensive odor from underneath it, and I understand that a great many do that. Perhaps you all do, I don't know.

Now, another thing, the X-ray has made us less ready to remove pulps and leave our patients open to the risk of all this apical trouble that we have heard so much about at this Convention and that we have read so much of in the various papers and in the Journals. I know it has made a very great impression upon me and I hesitate very considerably about removing a pulp where three or four years ago I went at it with a great deal of confidence and a great deal of satisfaction thinking how comfortably I could do it for the patient. I know if I now had to have a bridge from one tooth to another in my own mouth, say from a molar to a bicuspid, I would have certain things done that have not been considered quite the proper thing to do. For instance you know generally we are told not to put a cap over a vital tooth. Well, the first thing I would do—suppose it was for another patient, not myself, I would take that bite on a piece of wax and make a study of the contact to see how little I would have to remove of that tooth in order to get a sufficient amount of metal between the two teeth, the one that has the crown and the one that it has to bite upon. We know that the cutting away of a large amount of enamel and dentine in order to get the proper shape of the tooth does frequently result in the death of the tooth, and what is more, the pain becomes so great that we are tempted to think, "Oh, I guess that much will do," and slip it over, and it doesn't quite fit, and there are crevices and spaces and pockets and the like for decay to start, usually in an obscure place, and the pulp of the tooth dies, and the blame is thrown on the method of putting it over a vital tooth.

Then there is another thing, when we cover a vital tooth with a gold cap I do not think we are as careful as we might be in seeing that there is no defect in the sulci of the teeth. Many a time there is potential decay there and when we cover it up it goes on and on until finally the pulp is reached and the tooth dies and there is the abscess following. Now, to cut it

short I would just want to have the minimum taken out of the occlusal surface, be sure there are no defects in the sulci, and only bring the band to or at least a bit past the bulge. That is not a very scientific term, but you know what I mean. Burnish your gold well and leave the rest of the margin of the tooth bare. Why should you not be able to keep it as clean as the normal tooth?

Your crown would not have as much of a band but if your cement is as good that will not matter. You know how often a considerable bridge is supported at one end by a molar that happens to be very short, with a very narrow band, and why couldn't we keep the tooth vital and not grind so much away?

I think that is all I have to say on the subject, gentlemen. In fact the latter part of what I have said reminds me of one time I had to make some remarks, and I was talking with a man of great experience in speaking, and he said, you know if you are called upon to speak on a subject about which you know nothing, get up and talk about something else and it will do. I am afraid I have talked about something else, but I thank you for your attention. (Applause).

TECHNIQUE OF ROOT CANAL FILLING

Department of Operative Dentistry, Royal College of Dental Surgeons.

PREPARATION OF THE OPERATOR AND ASSISTANT.

The operator and assistant should be dressed for aseptic operating. Hands should be scrubbed and dipped in alcohol. It is not necessary for the hands to touch any of the materials or instruments which enter the canals, rubber gloves may be worn.

PREPARATION OF FIELD OF OPERATION.

The patient's mouth should be sprayed and rinsed with flavored water (wintergreen or peppermint).

Rubber dam put in position.

Teeth exposed through rubber dam wiped off with alcohol or phenol.

Sealing removed.

Cavity wiped with alcohol and dried with warm air.

Dressing removed from canal and tested for odor and moisture. If the dressing is dipped into H_2O_2 effervescence will indicate presence of organic matter.

PREPARATION FOR OPERATION.

Bracket Table.—All instruments used in any former operations should be removed and only those of immediate necessity kept on the table. The

whole root canal equipment should be brought forth to the table sterile and ready for use without being handled by operator or assistant. The instruments and materials may be taken direct from the sterilizer as they are needed or from towels containing them which have been sterilized.

Among the equipment should be a number of smooth broaches already wound with absorbent cotton, cotton rolls, cotton pellets, rubber dam, cotton wipes, root canal cleansers, root canal reamers and root canal pluggers of various sizes and forms as well as dressing forceps and other pluggers.

Drying of Root Canals.—With sterile cotton on smooth broaches carry alcohol into the canal. Wipe out the excess alcohol with the prepared broaches and cotton and apply hot air. If using a chip blower draw the air through the flame into the rubber bulb, thus sterilizing the air and gradually blow into the canal. If using compressed air this is sterilized by passing through a vapor bath. Now pass a heated broach into the canal as often as necessary or until all fizzing ceases. This broach is made from piano wire or irridio-platinum. The canal is now dry and ready to receive the filling.

INDICATIONS FOR USE OF CHLORA-PERCHA.

1. In all root canals freely opened to the apex, but which have not large apical openings.

2. In canals in which posts are to be cemented.

The Technique of Insertion.—Moisten the canal with oil of cajuput or eucalyptus. Dry out excess of the lubricant with cotton. Pump chlora-percha into the canal with a smooth broach, a little cotton on the broach may assist at first, then pump with a smooth broach several times. It is usually wise to pump until the patient gives response. If the canal is hard to fill use unvulcanized rubber as in pressure anaesthesia to force the chlora-percha home. Select a gutta-percha cone which approximately fits the canal to the apex and pass it up the canal, perhaps withdrawing and re-inserting several times until it is well settled to place. Several cones may be required to fill the canal. If the patient responds to any pressure wait a few minutes and then press the cone farther. An easy way to handle the cone is to flatten the large end with a pair of pinchers. When the cone is passed into the canal as far as it will go, pack and force it home with a root canal plugger, being careful not to punch holes in the cone and thus remove the mass. To accomplish this use a wad of cotton or paper over the gutta-percha to receive the thrust of the plugger. Cold air blown on the gutta-percha while packing facilitates the evaporation of the chloroform and makes a denser mass. Warm air or warm instruments expand the gutta-percha, cover the gutta-percha with oxy-chloride of zinc or oxy-phosphate with 5 per cent. red oxide of mercury added to prevent infection.

THE INDICATIONS FOR THE USE OF ROSIN SOLUTION.

1. In fine canals which can be thoroughly dried.
2. Canals which have been the seat of septic infection.

The Technique of Insertion.—Flood the dry canal with a thin rosin solution pumping it in with a wisp of cotton on a small smooth broach. When the canal is full pass a fine bristle to the apex and let out any air that may be entrapped. This is of vital importance. (For X-ray purposes dip the broach in oxide of bismuth and pump into the canal). Now pass the gutta-percha cone up the canal. Have a rigid cone and pass it half way up the canal and pump up and down forty or fifty times, as it dissolves, pass further toward the apex. The solution will enter the tubuli. When the canal is full, pack down with a cold plugger and wipe away any excess rosin solution. Rub steel pluggers on paraffin or cocoa-butter to prevent them sticking to cone. Fill pulp chamber with oxy-chloride of zinc or oxy-phosphate to which has been added 5 per cent. red oxide of mercury.

INDICATIONS FOR THE USE OF PARAFFIN COMPOUND.

1. Large canals freely opened.
2. Under fillings where no force or pressure is going to drive it through the apex.
3. If apical irritation is feared.

The Technique of Insertion.—With a wisp of cotton on a bristle moisten the canal with pure paraffin oil or liquid alboline. Now place a paraffin cone in the canal and pack it to place with a heated copper wire (about 60 C), add enough paraffin to completely fill the canal and have the whole in a liquid state so as to leave a homogenous mass when the broach is removed. Pass a gutta-percha cone, or better, a copper wire into the canal and leave permanently. Seal the pulp chamber with oxy-chloride or oxy-phosphate to which has been added 5 per cent. red oxide of mercury.

INDICATIONS FOR THE USE OF BISMUTH PASTE.

1. Roots with large apical openings from absorption or lack of development.
2. Temporary teeth.
3. Punctured roots.
4. Bifurcated openings.

The Technique of Insertion.—Place the jar of paste in a hot water bath and when the mass is liquefied carry some to the tooth with a syringe. The nozzle of the syringe must be warm and large enough to take up and discharge the paste. It may be necessary to pack unvulcanized rubber around the nozzle to force the paste into the canal or use the rubber as a piston as in pressure anaesthesia. A gutta-percha cone may now be gently passed into the canal.

INDICATIONS FOR THE USE OF MUMMIFYING PASTE.

1. In fine root canals where it is impossible at the time to remove all the pulp.
2. A temporary expedient.

Technique of Insertion.—Moisten the canal with oil of cajuput or eucalyptus. Dry out the excess of the lubricant with cotton. Pump the mummifying paste into the canal with a smooth broach, a little cotton on the broach may assist at first, then pump several times with a smooth broach. If the canal is hard to fill use unvulcanized rubber as in pressure anaesthesia to force the mummifying paste home. Select a gutta-percha cone which approximately fits the canal, perhaps withdrawing and re-inserting several times until it is settled to place. Cover the mummifying paste with oxy-chloride of zinc or oxy-phosphate to which has been added 5 per cent. red oxide of mercury.

MATERIALS FOR FILLING ROOT CANALS.

Gutta-Percha and Chloro-Percha. How to make.—Take a jar that will hold about two to four ounces, fill it about three-quarters with pink base-plate gutta-percha cut into squares or strips small enough to settle well into the bottom of the jar. Pour over this enough chloroform to cover the gutta-percha fully. Allow to stand for a few hours, closely covered. Shake well, and much sediment will fall to the bottom; gutta-perchas now used are loaded with oxide of zinc and other materials that are not suitable ingredients of chloro-percha for filling root canals. To remove these strain through cheese cloth into a wide mouth bottle with an outside cover, which is not so likely to become smeared as a cork that fits inside. Finally ground thymol crystals may be dissolved in chloroform and added, or may be thrown into the liquor undissolved—use about two or three drachms of thymol to an ounce of gutta-percha. As the chloroform evaporates add oil of cajuput to the solution to keep it liquid. After some months all the chloroform will have evaporated, and the gutta-percha will be held in solution by the oil of cajuput. This chloro-percha will be ropy and tenacious—not so short grained as that made from base-plate gutta-percha unstrained.

Gutta-Percha Cones put in a wide mouth bottle and covered with alcohol will thus be kept sterile and ready for use.

Pink gutta-percha is preferable to white, because the color makes a sufficient contrast to the tooth tissue to be easily followed if removal should be necessary.

Rosin and Gutta-Percha Compound.

Rosin	Gr. xli
Chloroform	3ii j
M. Fiat Sol.	

Place the rosin in a wide mouth bottle and add the chloroform, let stand for a few hours, when it will be ready for use. A little vaseline put

on the glass stopper of the bottle will help to keep the chloroform from evaporating.

Paraffin Compound.

Thymol	2 parts
Bismuth trioxide	30 parts
Hard paraffin (melting point) 56-58 deg. C. (133-136 deg. F.)	68 parts

The above formula may be put up by your druggist.

A very convenient and aseptic method is to have the paraffin for the compound made into cones and placed in alcohol. Liquid Alboline, Russian Oil or Petroleum is used as a lubricant for the canal.

Bismuth Paste.

Bismuth-Sub-nitrate	30 parts
Yellow vaseline	60 parts
White wax	5 parts
Paraffin	5 parts

Mummifying Paste.

- Oxide of zinc.
- Creosote or Oil of Cloves.
- Thymol.

Selections

CONSTITUTIONAL CONDITIONS CAUSED BY ORAL SEPSIS

By JUDSON DALAND, M.D., Philadelphia.

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Read before the Academy of Stomatology, Philadelphia, at its monthly meeting, January 25, 1916.

The object of this communication is to stimulate interest in the far reaching and sometimes vital importance of dental sepsis; to encourage the prevention or prompt detection and removal of septic foci; to emphasize the necessity for making dentistry a specialty in surgery, and to urge a closer relationship between the physician and dentist.

Although more than a quarter of a century ago Dr. W. D. Miller showed that oral sepsis caused constitutional conditions, its importance is only beginning to be appreciated. About three years ago this subject was presented to the Pennsylvania Dental Society, and excited no interest and no discussion. Two years later the subject of septic tonsillitis, as a cause of so called rheumatism, was presented to the Philadelphia Clinical Association, and in the discussion certain members denied that polyarthritis could be caused by a septic tonsil.

The frequency of filthy and septic mouths in hospital and dispensary patients, without obvious ill effects, is probably one of the reasons why so many physicians deny that mouth sepsis causes constitutional diseases. Dr. A. Marx White observed that twelve per cent. of the patients admitted to the hospital of the University of Minnesota were suffering from constitutional disease due to mouth infection, showing not only the importance but also the frequency of secondary infection.

THE QUESTION OF IMMUNITY.

Practitioners, observing that pus may be discharged from a sinus communicating with an apical abscess for months without producing manifest symptoms, erroneously conclude that oral sepsis rarely, if ever, produces constitutional diseases, forgetting that drainage lessens this probability, and that absence of symptoms does not prove the absence of disease. Certain of these patients may have acquired an immunity, while in others early pathological changes already exist that are recognizable with difficulty, or not at all.

Protective immunity may be lessened or lost by age, intercurrent diseases, such as chronic Bright's disease, diabetes, rhachitis, tuberculosis, influenza, fatigue, or overstrain, or any infection other than the one to which the individual is immunized. Many physicians experience mental difficulty in

associating oral sepsis with endocarditis, and yet it has been well known for many years that small septic foci in other parts of the body—as an abscess in the neighborhood of an ingrowing toe nail—may produce this lesion. It is well known clinically that recurring or chronic endocarditis may exist for years without producing symptoms demanding medical advice, and this disease may be caused by oral sepsis.

Serious consideration of the evidence furnished by clinicians, pathologists, and bacteriologists, including animal experimentation, during the past three years, cannot fail to convince the most skeptical that even small and apparently insignificant septic foci in the mouth are capable of producing, not only serious, but sometimes fatal diseases of vital organs. The virulence of the streptococcus is more important than the extent of the lesion.

DISEASES DUE TO ORAL SEPSIS.

That pyorrhea may produce furunculosis is evidenced by a case observed fifteen years ago, which greatly intensified my interest in this subject. The patient counted 180 boils and carbuncles which appeared during four years. Extensive pyorrhea was present for ten years. After the extraction of septic teeth and cure of the pyorrhea, the furunculosis disappeared with the exception of a small boil and one carbuncle, which appeared during the following three months, after which the patient remained in excellent health during the following thirteen years. As no treatment was employed, with the exception of laxatives and digestives, it is reasonable to assume that the pyorrhea caused the furunculosis. This experience marked the beginning of a study of the relationship of oral infections to constitutional diseases, and a careful examination of the mouth became a part of the routine of the physical examination of each patient.

Recently an increasing number of physicians and dentists have observed cases of so called rheumatism relieved by removal of septic foci from the mouth. They have likewise occasionally observed the extraordinary rapidity with which pain disappears from so called rheumatic muscles and joints; and this object lesson has, perhaps, contributed to the rapid spread of the belief that a septic mouth may produce constitutional diseases.

The most frequent clinical expression of the secondary manifestations of oral sepsis is so called rheumatism, better named septic polyarthritis, frequently associated with the involvement of sheaths of muscles and tendons, of the endocardium, pericardium, and myocardium, and the walls of arteries. Hartzell has shown that about half the cases of septic polyarthritis are complicated by endocarditis. Osteitis may occur in any bone without involving the joint, and is often overlooked when the vertebræ and sacrum are involved. Billings has proved that chronic dental sepsis is an important cause of arthritis deformans.

If the original focus remains undetected, recurrence, more or less frequent, leading to impairment or loss of function of the affected joints,

or cardiac incompetency, with or without embolism, may occur. In like manner acute parenchymatous nephritis occurs, which may become chronic if the original septic focus is allowed to remain; but when removed the albumin, casts, and erythrocytes frequently disappear. Acute primary infective parenchymatous nephritis usually subsides promptly when the septic focus is removed. Severe infections may cause secondary suppurative nephritis.

Moderate grades of anemia are common in mouth sepsis, and usually there is an equal loss of red cells and hemoglobin, although a greater loss of hemoglobin is not infrequent. Occasionally the blood picture is one of pernicious anemia, which may pursue a fatal course if the sepsis is severe and long continued.

Dr. William Hunter considers pernicious anemia as a chronic infective disease, and that a septic mouth is one of the causes. He calls attention to the frequency of septic diseases of the mouth preceding the appearance of the pernicious anemia.

It has been proved that bronchitis, pneumonia, pancreatitis, cholecystitis, cholelithiasis, indigestion, and peptic or duodenal ulcers may be due to a septic mouth. Acute gastric or duodenal ulcers may become chronic if mouth sepsis is allowed to persist. The infection is usually hematogenous, but may occur from materials swallowed.

Trigeminal neuralgia, secondary to apical abscess, is well understood; but that neuralgia in various parts of the body, including sciatica, may be due to toxic irritation or septic inflammation, is not generally recognized.

Iritis, phlebitis, skin eruption, and pruritus occasionally result from mouth sepsis.

One of the commonest and least recognized constitutional effects of mouth sepsis is the more or less well marked malaise, or feeling of great fatigue, due to toxic substances, produced by pyogenic organisms. That this is true is clinically evidenced by the prompt disappearance of this distressing symptom when the focal cause has been removed. When this condition exists unrecognized for a number of weeks or months, it is apt to be explained on the ground of excessive work, or as the result of stress and strain of the nervous system, or of other causes. Although mental or physical depression from toxemia may seem unimportant, it causes suffering, diminished efficiency and resistance, thereby inviting disease; nasal obstruction caused by the relaxation and swelling of the turbinal bodies, particularly noticeable at night, causing mouth breathing, unrefreshing sleep, and dryness of the tracheobronchial membranes, leading to inflammation, has also been observed.

Secondary infections due to oral sepsis may also be caused by a septic focus situated in any part of the body.

THE ROLE OF STREPTOCOCCI.

The brilliant work of Rosenow should be familiar to every practitioner

of medicine and dentistry. He has proved that a streptococcus of low virulence may be transmuted into one possessing high virulence, if deprived of oxygen; moreover, under suitable cultural conditions ordinary streptococci may be changed into typical encapsulated lanceolate pneumococci. Under moderate oxygen tension an ordinary streptococcus may be changed into *Streptococcus viridans*; and when deprived of oxygen may be converted into *Streptococcus hæmolyticus*. Streptococci, modified by varying cultural procedures, show varying selectivity for the different tissues of the body. In animals, heart lesions have been experimentally induced, and from these lesions the recovered organisms have caused ulcers of the stomach. With the organism obtained from this ulcer, infections of the joints have been produced. With the organisms obtained from the joints, pneumonia has been produced. He has, therefore, conclusively proved that streptococci possessing a low grade of virulence may, by cultural methods, be transformed in such a way as to produce not only organisms of varying virulence, but also organisms which, when injected into animals, uniformly produce the same lesion.

Streptococcus viridans, so commonly found in mouth infection, has a special predilection for the heart and joints. The intravenous injection of streptococci of the proper grade of virulence may be followed by ulcer of the stomach and duodenum, due to localized infection and secondary digestion; and the affinity of this organism for the stomach is so great that a general infection may not occur. Rosenow inclines to the opinion that this infection is by way of the blood.

The organism producing so called acute rheumatism is one occupying a position between *Streptococcus viridans* and *Streptococcus hæmolyticus*, which is more virulent than *Streptococcus viridans*, and less virulent than *Streptococcus hæmolyticus*.

Certain strains of streptococci producing arthritis often simultaneously produce endocarditis, pericarditis, and myocarditis, and when modified by cultural methods, these organisms may show a preference for muscles, including the myocardium and the kidneys.

The commonest of the organisms in septic foci of the mouth is *Streptococcus viridans*, which takes on the characteristics of *Streptococcus hæmolyticus*, when obtained from a deep abscess or from a region containing but little oxygen, as is typically present in apical abscess.

Hartzell has verified the observation that paraapical abscesses and pyorrhea pockets both harbor streptococci, which will induce in animals inflammation of the heart muscle, vegetations on the heart valves, infected joints, inflammation of the blood-vessel walls, and both focal and diffused infection of the kidneys.

Although Dr. Arthur Henrici concludes that periodontal inflammations are primary lesions, the organisms gaining access to the tissues through either the root canal or at the gingival margin, and are not secondary to some

other focus; nevertheless, it is probable that in exceptional cases the reverse may be true. He inoculated thirteen rabbits with a strain of *Streptococcus viridans* obtained from the saliva of persons with relatively healthy mouths, and two rabbits died with characteristic lesions and three died with no lesions. Of twenty-four rabbits injected with streptococci from a dental abscess, thirteen died with characteristic lesions and five with no lesions, showing that streptococci from periodontitis, although identical with cultural streptococci, were of higher virulence. He concludes that *Streptococcus viridans* is chiefly present in chronic dental abscesses and pyorrhœa alveolaris.

In 131 cases of pyorrhea treated in the dental infirmary of the College of Dentistry of the University of Minnesota, in 1914 and 1915, it is interesting to observe that in forty-one cases no disease could be detected; indigestion and stomach trouble were present in thirty cases; heart trouble in fifteen cases; neuralgic and nervous troubles in fourteen cases; rheumatism in fourteen cases; kidney troubles in five cases, and in eight cases the health was below par.

Hartzell's conclusions, after a very thorough consideration of oral infections, are as follows:—

First, the mouth is the constant habitat of many destructive organisms, and offers the best cultural media possible for their growth. Second, animal passage or the passage of an organism from one living being to another keeps these organisms in a constant state of change, exalting or depressing their pathogenic possibilities, dependent upon whether the living being to which they are transferred is relatively highly immune, or has no immunity. Third, animal passage is being made by these pathogenic bacteria; they gain entrance into the mouth by the following means—the inhalation of the dust of the streets and living rooms, foods, fruits, drinks—milk and water—finger tips, kissing, use of common drinking cups, etc. Fourth, the constant changing reaction of the mouth from alkaline to acid favors transmutation as well as animal passage, in that it inspires exalted activity on the part of the organism. Fifth, oxygen tension is always reduced just in proportion as the organisms find their way into root canals and pyorrhea pockets, thus making possible changes in organisms which induce them to attack one tissue or another. Sixth, clinical observation is responsible for the belief that almost every individual who reaches manhood or womanhood has one or more blind alveolodental abscesses to his or her credit, and that these abscesses and pockets contain streptococci among other organisms. Seventh, ninety per cent. of the whole body politic present lesions which range all the way from a mild gingivitis to deep, blind pyorrhea pockets around their teeth. Eighth, tooth root surface in pyorrhea pockets is always more or less coated with living micro-organisms, constantly ready to make incursions, either into pulp chambers or into the tissue surrounding the roots, where entry into the circulation is rapid, easy, and constant. Ninth, it is the constancy

of the supply which eventually breaks down immunity.

Mouths apparently healthy may contain organisms possessing sufficient virulence to cause the death of a mouse from streptococcus peritonitis in twenty-four hours.

SHORTCOMINGS OF DENTAL RESTORATIONS.

Some dentists are of the opinion that ninety per cent. of their work is mechanical, and consequently the brains of the profession have been chiefly concerned with mechanical problems, and too little attention has been given to the septic relationship of the mouth to the body in general, from which it is inseparable. It is an all important duty to prevent or promptly to detect and remove sepsis when present. The evils of improper mastication are well recognized and ably met, but in rendering this great service to the patient, let us not forget the greater good secured by preventing secondary infections.

There is no doubt that many septic teeth have been allowed to remain in the mouth months or years, to the detriment of the patient. On the other hand, the evils due to interference with mastication caused by loss of teeth should not be forgotten, and often the question as to which of the two evils is the greater must be considered.

Ulrich, quoted by Leonard, states that 1,000 roentgenograms taken at random indicate that seventy per cent. of artificially filled teeth roots were abscessed; and Leonard corroborated this statement by examining 100 cases in which sixty per cent. of the artificially filled teeth were abscessed.

Bridge work, capped teeth, and other mechanical appliances for aiding mastication sometimes cause suppurative gingivitis, and often favor the accumulation of food and bacteria, which is removable with difficulty or not at all. Physicians view every capped dead loose tooth as suspicious, because so frequently roots of such teeth have shown apical abscesses. It is easy to understand the impossibility of satisfactorily treating a dead pulp in curved or distorted roots, but it is not easy to understand why apical abscesses should be found so frequently in filled or capped teeth, when a roentgenogram shows roots reasonably straight.

It is now known that a tooth may show no clinical signs of disease, and the X ray show apical abscess. When about to devitalize a tooth, always remember that a dead tooth is a candidate for infection. Unless septic teeth can be cured promptly they must be extracted, and the patient must endure the loss of masticating power.

CO-OPERATION OF PHYSICIAN AND DENTIST URGED.

In my opinion it is the duty of the dentist promptly to communicate with the physician should a patient show evidence of oral sepsis. The physician, upon discovering evidence of the infection, which he believes may be dental in origin, must depend upon the skill of the dentist to determine the existence or absence of such lesion. The dentist should not be

over-sensitive when requested to re-examine his own work, or feel that such a request reflects upon his professional skill. He should approach the solution of this problem in a purely scientific spirit, with the sole object of ascertaining the truth. No examination is complete until every tooth, every root, and every mechanical appliance has been thoroughly studied, removing, when necessary, fillings, caps, and mechanical appliances. A roentgenogram is essential to diagnosis. If, in a serious case, dental sepsis exists, and the report of the dentist is negative, important vital organs may be so seriously damaged as eventually to cause the death of the patient.

In advancing destructive disease of vital organs, such as the heart, vessels, or kidneys, the loss of a tooth should not be given importance. In serious cases, threatening life or causing disability, when the cause is obscure, the physician is sometimes compelled to advise the extraction of suspicious teeth, unless the dentist is absolutely sure that they are normal.

Within the last decade the importance of the tonsils as a source of infection has compelled physicians to request the laryngologists to perform tonsillectomy, even when the tonsils appeared normal; and not infrequently the removed tonsils have shown an abscess which has caused joint and heart disease. The physicians have received from the laryngologists more sympathetic consideration than has been accorded by the dentists.

When an ophthalmologist discovers a retinal hemorrhage with no other symptoms, it is the invariable practice that this information is at once communicated to the attending physician, so that he may determine if Bright's disease exists and safeguard the patient. And in my opinion the dentist should do likewise, whenever mouth infection is discovered.

THE DENTIST'S OPPORTUNITY.

The rapidly increasing importance of dentistry in its various branches, now greatly added to by the problems of secondary infections due to septic foci in the mouth, marks a great epoch in the dental profession, and presents a great opportunity. If it accepts this great responsibility, it is plainly evident that much work must be done, and done quickly. The graduates in dentistry and medicine need instruction. The faculties of medicine and dentistry should each appoint a special instructor upon oral sepsis, to deliver lectures to the students upon this subject. One or more dental surgeons should be on the staff of each of the hospitals and dispensaries of Philadelphia, prepared to do work upon the same basis as the physicians and surgeons.

That the dental profession is awakening to the importance of this great opportunity is shown by the establishment of the Research Institute of the National Dental Association at Cleveland, to which one-third of the profession have already contributed \$40,000. The splendid results already obtained by this research institute should be an inspiration to every dentist. Similar research laboratories should be established in each large city where

dentistry is taught, which should be supported by the profession and the public.

In conclusion, I earnestly recommend that immediate steps be taken to make dentistry a specialty in surgery, on the same basis as the other specialties in medicine, by so arranging the course of study for the future student of dentistry that he shall receive the degree of Doctor of Medicine, thereby bringing about that close relationship between medicine and dentistry which is so urgently necessary.—*New York Medical Journal*.

Dental Societies

POST GRADUATE COURSE

At the request of the School of Dentistry, Medical College of Virginia, and for a number of other reasons, the place of meeting of the annual class in Dental Prosthetics will not be Toronto, but the charming Southern city of Richmond, Virginia, a little over a night's run from Toronto. Following the increased amount of extraction of teeth as shown necessary by the X-ray and the resulting change in the sanitary and engineering aspect of these mouths, and the design of restorations for these has led to a remarkable demand for information, especially as touching Partial Dentures.

Dr. W. E. Cummer, whose lectures, demonstrations and models in Partial Dentures are exceptionally complete, and embrace some fundamentals in design, new to many, is under arrangement to present this subject in Salt Lake City, Utah; Portland, Oregon; Spokane, Wash.; San Francisco and Los Angeles, Cal., before meeting the class in Richmond, Virginia. The course in Richmond will be given from August 14th to the 26th, and will be an opportunity for those interested in the Prosthetic side of Dentistry. Those interested would do well to communicate with Dr. J. A. C. Hoggan, 114 North Fifth Street, Richmond, Virginia, U. S. A.

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President, Dr. Stanley, Ottawa; Vice-President, Major O. K. Gibson, Ottawa; Secretary-Treasurer, Dr. H. Winters, Ottawa; Assistant, Dr. O. L. Weaver, Cornwall; Supervisor of Clinics, Dr. Bradley, Ottawa; Membership Committee, Dr. W. B. Cavanagh, Cornwall, and Dr. W. C. Macartney, Ottawa.

Dominion Dental Journal

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Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII.

TORONTO, JULY 15, 1916.

No. 7.

MAKE AN ELECTION BY-LAW

When the Board of Directors meet in the autumn to make such arrangements as may be necessary for the next college session, they might well consider a few changes in the Dental Act and By-laws. The amount of the annual fees and the manner of collecting it are matters often discussed in these columns, but there is another matter worth serious thought. Without going seriously into the history of the election of members of the profession to the Board of Directors in the past many things have occurred which would make it important that there should be a by-law covering controverted elections. On several occasions charges of what would have been deemed grave irregularities in other elections, have been laid before the board. The reply the board has always made to charges of bribery, purchase of votes and forgery in connection with board elections, was that there was nothing in the Act or the By-laws which gave them power to take any action. The complainants were always directed to the common law covering such matters. It is quite clear that no candidate or dentist interested in a candidate is likely to go into the courts, and bear the expense and

anxiety of proving this charge when the candidate elected could not even be unseated, no matter what offence he may have committed outside of a criminal one. There is not even a by-law or statute which would sanction the board in an investigation of what would be irregularities in other elections. The whole matter is settled once the scrutineers declare a candidate elected. The scrutineers have no right, power or means of going behind the votes as they are handed them by the secretary. It is nobody's business to inquire how the votes or the signatures on the ballots were obtained. On one occasion a straight charge of forgery of a signature on a ballot was made without any serious investigation of the matter having been made.

When there are no such charges or likelihood of any pending is the proper time to make the necessary by-law. There is power in the act to regulate the practice of dentistry and surely there is power to regulate its elections.

Editorial Notes

Major P. P. Ballachey died on the field of honor June, 1916.



Dr. Howard J. McLaurin, of Winnipeg, was killed in action somewhere in France, June 14th.



Dr. Arnold Semple has been appointed to the C.A.D.C. in No. 2 Division, with rank of Captain.



The Canadian Dental Association is preparing a splendid programme and a large attendance is expected.



Dr. F. E. Bennett, St. Thomas, Ont., captured the prize for the largest and best exhibit of tulips. This is the third time Dr. Bennett has won the prize.



Sergt. R. V. McLaughlin who has been overseas with the C. A. D. C. for the past year has returned to take his final year at the Royal College of Dental Surgeons.



Dr. W. E. Cummer, Toronto, Professor of Prosthetic Dentistry in the Royal College of Dental Surgeons, is giving a series of addresses and clinics on Prosthetic Dentistry in Utah, Washington, Oregon and California during the next two months.

We congratulate the British Columbia legislature in having appointed such an efficient and experienced member as its Minister of Education. Dr. McGuire will be a credit to his profession and his province in his high and responsible position.



The Board of Directors of the R. C. D. S. are to be commended for appointing a permanent treasurer, who has nothing to do with board elections. Dr. Willmott as secretary is in a better position to collect the fees of the graduates than any member of the board. In the past the treasurer was only a temporary official whose name and address changed from time to time to the disadvantage of the profession and the treasury.

DENTAL OFFICERS OF CANADIAN ARMY DENTAL CORPS, VALCARTIER CAMP, QUE.

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ALCOHOL NOT AN ANTIDOTE TO PHENOL

Martin I. Wilbert, of the Public Health Service, in the *Public Health Reports* for April 28, 1916, makes some valuable comments on the widespread belief in alcohol as an antidote to phenol poisoning, and the studious avoidance of it as a diluent for phenol when used as an antiseptic or disinfectant. The belief in alcohol as an antidote, he says, is growing, but it is based upon erroneous reasoning. Wilbert recalls that Dr. A. M. Phelps in the *New York Medical Journal* for January 14, 1899, was probably

the first to call attention in print to the antagonism of alcohol to phenol; he cited the experiment of Dr. Seneca D. Powell, who was accustomed to rinse his hands alternately in phenol and alcohol as a demonstration to his classes at the Post-Graduate School. Powell, misunderstanding the significance of this experiment, illogically announced that a similar action would take place in the stomach; in other words, alcohol would be found to be an antidote to phenol. Since then, the same error has crept into many publications; it was even suggested by Williams (*Druggists' Circular*, March, 1900) that a mixture of the two liquids would make a safe and excellent household preparation. The dangerous mistake has now become embodied in the laws of several States drawn to restrict the sale of carbolic acid.

The same line of reasoning has led to another error, equally a'surd, but not dangerous, that mixtures of alcohol and phenol are less efficient as disinfectants. Again it was in the *New York Medical Journal* for March 6, 1909, that the antidotal power was first questioned. Dr. E. R. Zemp (*loco citato*) observed that no chemical action took place when the two drugs were brought together; the carbolic acid was simply diluted, hence its caustic power was diminished. Macht (*John Hopkins Hosp. Bull.*, xxvi, 1915) demonstrated that the internal use of alcohol in phenol poisoning might be unfavorable. He found that the influence of alcohol depended on the time of administration; if given at once, it might actually hasten death. On the other hand, he found that an animal previously intoxicated with alcohol could withstand better the effects of phenol taken afterward.

Recent experiments undertaken by the P. H. Service clearly show that ethyl alcohol in the presence of water has no appreciable influence on the toxicity or on the germicidal properties of phenol, and that, therefore, it may be advantageously used as a solvent, alone or in mixtures, to promote the solubility of phenol in water for use as a germicide or disinfectant. In the presence of water both alcohol and glycerin are practically inert so far as any detoxicating action is concerned. The results noted suggest the fallacy of enacting legislation designed to promote the sale of mixtures of phenol and alcohol under the impression that ethyl alcohol will serve as a detoxicant to phenol.

The experimental work clearly showed that the addition of ethyl alcohol to phenol not only increased the solubility of phenol in water, but also increased rather than diminished the antiseptic value of the resulting solution. Ethyl alcohol can be used to advantage as a substitute for glycerin in making antiseptic solutions of phenol.

The experiments with animals proved that the addition of ethyl alcohol to solutions of phenol in water does not, in any way, inhibit the toxic action of phenol, but rather tends to facilitate absorption and thus hasten death.
—*New York Medical Journal*.

Dominion Dental Journal

VOL. XXVIII.

TORONTO, AUGUST 15, 1916.

No. 8.

Original Communications

PRESIDENT'S ADDRESS

F. C. HARWOOD, D.D.S., L.D.S., Moose Jaw, Sask.

Read before the Dental Society of Western Canada, June, 1916.

Members of the Dental Society of Western Canada.—In opening this, the first Dental Convention held in the Province of Saskatchewan, it



*F. C. Harwood, D.D.S., L.D.S., Moose Jaw, Sask.
President Dental Society of Western Canada, June,
1916.*

is my sincere pleasure and privilege to extend to you all a very hearty welcome.

I wish, first of all, to thank you for the honor you have conferred upon me, in electing me to be your presiding officer. Much as I appreciate the honor, I must confess the responsibilities are quite as fully appreciated.

I desire right here to thank the other officers and members of the various committees for the faithful work they have done in order to make this meeting a success. They set to work manfully on rather short notice, and with what result will be seen as the Convention progresses.

Let me say to you, members of the Society who have had no hand in arranging this programme, you, too, have a responsibility for the success of this meeting. Few things at a Convention are of more value than the discussion of the various papers; and I trust that each one will enter into them heartily, and give what he can from his store. If we are willing to give from our experience we usually profit more from the experience of the other fellow.

Perhaps to the men who have not been in the habit of attending our meetings, a brief history of the Society may be of interest. It was formed in 1900, and included then as now, the territory from the Head of the Great Lakes to the Rocky Mountains. At that time the dentists were not numerous, but the first meeting held in Winnipeg had an attendance of eighteen. Conventions were also held in 1901 and 1902, but for various reasons the Society did not meet again in Convention until 1909, when a very successful re-organization meeting was held in Winnipeg. Following that there were enthusiastic Conventions held in Winnipeg each year until 1913, when a successful meeting was held in Calgary. In 1914 the meeting of our Society was withdrawn on account of the Canadian Dental Association meeting in Winnipeg. Last year on account of the war, it was thought best to postpone the meeting for that year; but in order that the splendid work the Society had done in the past might be maintained, it was decided early this year not to postpone it further; and we are meeting here to-day as a result.

I think many of us fail to appreciate the benefits which accrue from Society work and meetings such as this. They help to maintain our enthusiasm for our work, and keep us abreast of the rapid advances which are taking place in our profession. Then, too, the interchange of thought and social intercourse is a wonderful stimulus.

My first message to you then is this: Let every member present enter heartily and enthusiastically into the work of this meeting.

We are, at this meeting, placing considerable emphasis on Oral Hygiene, and rightly so. Within the last few years there has been brought home to us, more forcibly than ever before, the necessity for keeping the mouth, the portal of the body, in a healthy condition. We, as dentists, know what an influence the condition of the mouth has on the mental and physical growth and efficiency of the individual. It therefore becomes our plain duty to pass that knowledge on to the public in whatever way we can.

I feel that much is being-done, and will yet be done, in examination of school children's teeth. I am in hearty accord with it; but I feel that still more will be done in the line of Preventive Dentistry. I know that those who are conducting Dental examinations in the schools and elsewhere, are at the same time lecturing on the proper care of the teeth, that disease of the mouth and teeth may be reduced to a minimum. From this latter I expect the greater results. It seems to me the more we engage in work of this kind, the more do we justify our claim to be recognized as Professional men.

In speaking of our Professional status, there is something else which might well be mentioned here. When a patient calls for the first time, how often are we prone to examine the teeth for cavities, fill them, and stop there. We do not look at the entire mouth as an important factor in the preservation of health. Let us get such a conception of the ideal, that in each mouth we examine we shall have a mental picture of what that mouth should be in order to fully perform its functions from the standpoint of health. Until we have helped our patients to see something of that picture, and advised them what should be done to put their mouths in the best possible condition, from the standpoint of health, as we have said, we have not fulfilled our whole duty towards them. When we have given our advice, the decision as to whether or not they will take that advice rests with them; and our responsibility is discharged regardless of their decision. Don't fear that they will think you are trying to "drum up business." If it is properly explained to them, the great majority will appreciate your interest in their welfare; and will immediately come to look on the dentist, not as one who fills, crowns, or extracts teeth merely, but as a professional man, who is concerned with the health of the individual and the community. Their estimate of our Profession is thereby that much elevated.

I cannot close this address without a reference to the place our Profession is taking in this great war. As you know, the Department of Militia has formed the Canadian Army Dental Corps, and its ranks contain many men who have been in the habit of attending the meetings of this Society. Several others are serving their country as combative officers. To all these we are anxious to render due honor. We hope to have some of them with us at this meeting, and more fully go into the work of the Army Dentist.

In closing I wish to call the attention of the members of this Society to the fund of one thousand dollars which has been presented by the Canadian Oral Prophylactic Association to the Canadian Dental Association, to be used as a prize for the best original research work in Dentistry, by a Canadian. May it encourage some of you to do work of that kind.

As my last word, let me repeat what I said at the outset, I hope all will enter heartily into the discussion of the various papers as they are presented, and that as a result of the enthusiasm kindled up at this

meeting, many men will go home with a keener relish for their work, and resolve to do still better work in their chosen profession.

DISCUSSION.

DR. MOYER, of Rosetown.—Ladies and Gentlemen: You are doing me an honor in asking me to lead the discussion on this address. I realize my limitations, and feel that I cannot do justice to it. When I came to your city this morning I didn't know just what to expect. I was something like the young lady preparing to go to a party, "Mother," she asked, "Shall I wash my neck for high dress or low dress?" I should have taken a whole bath.

I never had the pleasure of basking in the pleasing smile of Dr. Harwood before. Last Saturday night in Rosetown, I met a lady and gentleman from Moose Jaw. I asked them if they knew Dr. Harwood. The lady said, "He is a lovely man," and the gentleman, "He is a fine fellow." So being a "lovely man" and "a fine fellow," I knew he would certainly give us a sane paper.

I was interested in the Western Canada Dental Association away back in 1900. The west was then, as the Irishman said about virgin prairie, "the place where the hand of man never set foot." The President has referred to the benefits to be gained from Dental Conventions; the greater benefit, however, is not so much to ourselves as to the other fellow. I believe the greatest benefits we get from Conventions in addition to hearing the papers read and the discussions, is that it brings us in contact with men of sound mind; men whom we can exchange opinions with, and get back and beyond ourselves; and which will not only help us but help the whole community.

The President has told us that considerable emphasis in this Convention will be placed on Oral Hygiene. That is a subject that we are becoming more interested in from year to year. It is a good question for us to consider.

Another matter of vital interest that was referred to is the examination of school children's teeth. That is already being done in the cities, but the city pupils probably amount to 15,000 out of 100,000 who will not receive that benefit. You will remember, those of you who are from Ontario, that away back a number of years ago, we had in the public schools the subject of Hygiene, and to pass the Matriculation examination you had to pass that subject. I am of the opinion that if we had something of that nature now together with Oral Hygiene, it would benefit both the masses and the classes. When the great school question is being discussed throughout the province we trust that this question will receive due consideration; and I trust that we will be able to do something to help along in that direction.

Referring to professional status, since the old days when the examination for getting into dentistry was most mechanical, our status has come up very rapidly. We are coming into our own—getting on to ourselves, and the public is getting on to itself. After all our status is determined by our influence; and that influence has got to be not only professional, but municipal and social. Take your place outside your office, stand up and look every man in the face, and know that you are his equal.

The spirit of the President's address is the old Macedonian cry, "Come and help us," during this Convention. You gentlemen did not come here critically but sympathetically. Let us make this Convention the very best ever held in the West. By entering heartily into the discussions we will reap the greatest benefit to ourselves. What matter who gets the worst of the discussion, so long as we get the best results out of the discussions.

DR. PARKER: I have not been at many conventions, and my experience is limited, but wish to express my appreciation of the paper that was given us by the President. I think this is a very high tone that he has taken.

During my limited experience I have come to realize that when patients come to us for treatment very often they have put it off so long that the whole oral cavity is in an awful mess. There is very little but mechanical work that we can do; but if we can induce the public to an appreciation of our advice, it is one of the very greatest things we can do.

I want to express my appreciation of the President's address.

DR. FASKIN: I realize something of the difficulty of the examination of school children's teeth in the country, and might say that we have arranged to have at this Convention Dr. Black, of the Education Committee, on Tuesday, at 5 p.m., who has asked that we appoint a committee to work with them. They want to extend the Dental examination to the rural school districts.

DR. COX: There is one point of Dr. Harwood's address that I am fully in sympathy with, and that is the thorough examination of the mouth. When a patient comes in we just say, "Which is the tooth that is aching?" or "What do you require to have done?" and then do it. When patients present themselves, the first thing to do is to give them a thorough examination and charge a fee for it. Why should we not have that recognition as well as the physician or lawyer? When any one goes in to consult with them they expect to pay a fee. A patient would appreciate advice a whole lot more if we were to charge for it. It is not the money we are after, but the appreciation. Patients would take more interest in their mouths if we were to make them pay for the advice.

DR. COWAN: Mr. President, if none of the others will do so, I move that this address be received. There is only one point left in this address—all the other points have been pretty well covered. The President

referred to the Department of Militia forming an Army Dental Corps. This is correct and yet not correct. If I remember rightly, at the meeting of the Canadian Dental Association held in Ottawa, some years ago, the dentists themselves originated the idea of an Army Dental Corps. I would like to have full credit given to the dentists of Canada for having originated the idea; and they had quite a task for several years to get the Government to recognize the Army Dental Corps.

I think the President's address is an exceedingly good one, and have pleasure in moving that it be received.

DR. ROE: I would be one of the last to detract from the honor coming to the dentists of Canada for having originated the idea of the Army Dental Corps; but while Canada may have been the first among those to have an Army Dental Corps, she is not the only one of the nations. Our valiant Allies, France, has a magnificent Army Dental Corps; our other cousin and Ally, Australia, has an Army Dental Corps. After mentioning the two I have just mentioned, I hate to be compelled to admit that Germany also has an Army Dental Corps.

I have much pleasure in seconding the motion that the President's address be received.

ADDRESS OF WELCOME

MAYOR W. D. COWAN, D. D. S., Regina, Sask.

Read before the Dental Society of Western Canada, June, 1916.

It has been my pleasure during the past six months to welcome a large number of Conventions to this City of Regina. As a matter of fact, as all of you are aware, this has become quite a Convention city; and of course it is my duty to appear at all of those Conventions to which I am invited, and present a welcome in the name of the City of Regina.

Most of these, in fact all of them, I have known by reputation, and I was exceedingly pleased to extend to them a welcome to Regina; but you are a little different to the others in that I have known this organization ever since it was formed in the City of Winnipeg. I remember the first meeting held on the top floor of the old McIntyre Block, when there were eighteen present. Since that time I think I have only missed two meetings; and having formed a pretty good opinion of you, I can much more heartily welcome you to the City of Regina than I did the other organizations which it has been my pleasure to welcome here. Personal acquaintance does either one of two things—you either become enamoured of that person or organization or want to cut them out. Because of my knowledge of you I like you all the better.

I can welcome you here to the City of Regina because I realize more and more the benefit this Convention can be to all of us. For many years

I have wanted to see just such a Convention as this, but it seemed impossible before.

I have been in this part of the world now longer than any of you. It is just twenty seven years since I first saw Regina, which was then only a mud hole. Dentistry has changed greatly in that time. Then we were two or three thousand miles away from any organized body of dentists. Had no near neighbors except one here in Regina; and we were both practicing dentistry in the same old way, one could not teach the other very much. We should keep abreast of the great advance that has been made in dentistry. I fancy there are some dentists to-day in the smaller towns of Saskatchewan who are placed in the same position that we were. I appreciate their position, and from the benefits that will be derived from a Convention of this kind we will all unconsciously improve ourselves.

I remember quite well when the first meeting of Western Canada Dentists was held in Winnipeg, we saw some things there which changed my opinion of dentistry. Pressure anesthesia was a revelation to me. I had been in the position where people would come two or three hundred miles to get work done, they would only have a day or two to stay in Regina and probably have six or eight teeth to be attended to, and as a result of this condition I found it hard to continue the practice of dentistry until the advances in dentistry were made.

However, there are a lot of things new to all of us, and we are satisfied that we will have to continue these Conventions from year to year, and keep abreast of the times. We must take every means at hand to discover what the advances are, and be able to practice them. You must apply the knowledge that you have gained here, and if you gentlemen do not do this, you might just as well not have come.

As already stated, I have seen some changes in the practice of dentistry, it was simply extract teeth, gold filling or gold crowns. People did not appreciate dentistry in anything like the way they do to-day; and I think we can say that the dentists of Western Canada, ever since the Western Canada Dental Society was formed, kept up quite a general propaganda; and by the excellent work which they have done, and by the position which they have taken socially, they have conferred great benefits on the public; and I sincerely hope that that work will continue.

I have been greatly pleased with the fraternal spirit which has existed between the dentists of Saskatchewan. In all the time I have been here in the West I have only met two dentists whom I thought were below the high standard—one was superior to the other, but they were not in the same class at all. Two out of this great army of men in Western Canada is a very small proportion. The men who have come out to this country to practice dentistry have been of a very superior class; and their relationship one to the other, has been of great benefit.

Now, Mr. President, as the dentist who depends on his good work to advertise him, so is the City of Regina. It is a mighty good city. It is comparatively young as you all know; but let me say here that we think it has influenced the whole life of Western Canada. Western Canada is the land of tremendous opportunities; also the land of very great necessity. Some say that this city was paved with two or three millions of dollars—it was paved with absolute necessity. We had to pave it and we did it. Necessity is one of the things that spurs us on to-day. One of the things that spurred Regina on, because Regina is not located where it was intended to be located. That is the reason we have one of the best cities in the Dominion of Canada, we were compelled by its location to go ahead with improvements. We have pulled through this financial strain as well at least as any of the others, and have got our city on a better financial basis to-day than ever before.

Again let me express my appreciation of your meeting here. The citizens of Regina appreciate your meeting, and we will do the very best we can to show you that we appreciate you; and anything that I can do to help will most assuredly be done.

THE PRESIDENT: I am going to make use of my authority as your presiding officer, and call upon a man here whom we have already heard at considerable length and with a good deal of pleasure. This is the first intimation he has had that I am going to call on him. I am going to call on Dr. Moyer, of Rosetown, to give us a few remarks in reply to this address of welcome.

DR. MOYER: I am glad to-day that we have in our midst a man who is big enough and strong enough to be mayor of the Capital City of Saskatchewan.

I am not a story-teller—sometimes just a common liar. Not long ago an American and Canadian went from Toronto to Montreal. When the Canadian remarked on the beauty of the passing scenery, the American said, "We can beat that in the States." When passing the Thousand Islands, the American remarked, "We can beat that in the States." When they had reached Montreal and had gone to the Windsor, the American took a room, then the Canadian went down to the canal and filled his pockets with crabs, took them up and put them in the American's bed. When the American went to bed and found them he demanded to know what they were. The Canadian said, "They are bed bugs, can you beat that in the States?" We are proud of Regina, but there are other places in Saskatchewan.

I am very much pleased with that address. The Mayor has welcomed us here in a way that we appreciate; and I am very pleased to add this expression of my admiration and appreciation of the Address of Welcome.

THE PRESIDENT: I am also going to add my appreciation of this Address of Welcome. While His Worship did not convey to us the

freedom of the City, for fear possibly of what we might do with it—that possibly was taken for granted. We wish to show our appreciation of the hearty welcome received at the hands of the City of Regina through His Worship the Mayor. In addition to Dr. Moyer, I wish to thank you for the hearty Address of Welcome, and can assure you by the way we are starting that we are going to have a good time in Regina.

DR. COWAN extended an invitation to hold the meetings in the City Hall should they get too crowded, which was accepted by the President.

THE RELATION OF THE CONDITION OF THE ORAL CAVITY TO THE GENERAL HEALTH

B. A. DICKSON, D.D.S., L.D.S., Moose Jaw, Sask.

Read before the Dental Society of Western Canada, June, 1916.

I. Introduction.

II. Subject:—

- (a) Mouth—vestibule of life.
- (b) Mouth—perfect media for bacterial growth.
- (c) Beginning of Mouth-infection.
- (d) Infection disseminated from the mouth.
- (e) Disease resulting directly or indirectly to the conditions in the oral cavity.
- (f) Manifestations of systemic diseases, indicated by conditions in the mouth.
- (g) Relief from the effects of infectious oral cavities.

III. Conclusion.

The mouth is to-day, as it has been throughout the ages, the location of malignant factors of general infection and disease; but until recently such conditions have been wholly unperceived, or if perceived, wholly neglected.

In the past medical science used the tongue as an index to the general systemic condition, but failed to recognize the infection, so virulent and prolific, within the mouth itself. Similarly, dental science in the past devoted its energies to the restoration of the masticating organs, and overlooked the serious consequences of contagion in the mouth. Nor did either suspect that many serious systemic disorders were directly traceable to diseased conditions of the teeth and oral cavity.

The mouth has been spoken of as the "vestibule of life," which seems appropriate, when we consider that all the nutrition supplied to the body passes through the oral cavity. But when we are told that the oral cavity is also the "vestibule of disease," it causes us to hesitate, to think, before expressing an opinion on the subject. It has been stated, upon

eminent authority, that ninety per cent. of all diseases enter the system through the oral cavity; and I believe Dr. Osler even places the percentage as high as ninety-five. It is such facts as these, which on distribution, are causing the awakening laity to take more notice of and interest in oral hygiene.

The conditions required by pyogenic bacteria for favorable growth are moisture, warmth and air; the food required is organic material. Such conditions are found ideal in the mouth. The temperature remains about 98, which is favorable to their growth. The moisture is supplied in abundance. All the air required is obtainable. As for organic matter as a media for growth, there are decomposing particles of food, mucous secretions, deposits from saliva, sputum, along with pus exudate from irritated or diseased mucous membranes or gums, abscessed conditions of pulp tissues, and decaying tooth tissue, all presenting ideal conditions favorable to the growth and multiplication of bacteria.

For the beginning of mouth infection we must go back to the earliest childhood, subsequent to birth. Here may readily be seen the general systemic effects of mouth infection. If the child's mouth is not cleansed after each feeding, small particles of food remain in the mouth, ferment, and are swallowed at the succeeding meal, resulting in a disarrangement of the normal stomach, often causing vomiting, indigestion and allied disturbances. Nor does the trouble end here. If allowed to persist day after day, and gradually lengthening into weeks and months, a diseased condition of the mucous membrane commonly known as "sore-mouth" is almost certain to follow; accompanying which are the well-known systemic symptoms of rise in temperature, loss of appetite, vomiting and diarrhoea.

It is also during childhood that the dreadfully fatal disease "cancrum oris" manifests itself in the oral cavity. The systemic effect of the infection is so rapid that death often ensues in from two to four days.

These conditions, favorable to infection, increase with time during the eruption of the deciduous teeth, the shedding of the temporary teeth, the eruption of the permanent teeth, and thence on as long as teeth are retained in the mouth. But the most critical period is that of childhood and early youth; a time when the oral cavity should receive the greatest attention and care; but sad to relate, the time at which it generally receives the least amount of attention.

Again, infection may be scattered broadcast from a mouth harboring bacteria. Dr. D. D. Smith has been able to demonstrate that a person coughing or sneezing in a room where there is no appreciable current of air, has been able to scatter germs to a distance of more than twenty-two feet. Thus the more pathogenic microbes the mouth contains, the greater is the danger from infection. Placing a handkerchief over the mouth during sneezing or coughing, will largely prevent this dissemination of

bacteria. This feature is taken into consideration during surgical operations where every one present is required to wear a mask over the mouth.

From this we can broaden out to the use of the public drinking cup, which compared with other evils, is perhaps one of the greatest spreaders of disease germs from the mouth. Thus we see the necessity of keeping the mouth in as perfectly healthy and aseptic condition as is possible. When we consider that in the mouth of a normally healthy individual we may at any time find pathogenic bacteria and perhaps of some of the most virulent of diseases, as pneumonia, tuberculosis, diphtheria, scarlet fever, etc. It at once appeals to us that it is necessary to practice oral hygiene.

Without perfect masticating organs it is impossible to have perfect mastication, and without perfect mastication impossible to have perfect digestion. As a result of imperfect indigestion it is needless to state the many systemic disorders which may follow. Even many people with perfect masticating organs may not masticate their food properly. However, the greatest danger lies in the fact that many people with dental caries prevalent in the mouth, will knowingly allow such a condition to continue for months without attempting to have the trouble remedied until nature's warning "pain" sends them to the dentist.

Teeth affected with caries form a very admirable culture media for bacteria. In the process of mastication these germs are swallowed, and allowed to pursue their deadly work in the stomach and intestines; or may be carried through the general circulation to find a suitable location for attacking the tissues at some distant situation in the body.

Teeth with large cavities form a pocket for the lodgment of food which ferments and decays, this in turn being swallowed at the next meal. Then the person wonders why he is troubled with dyspepsia and indigestion. Persons affected with alveolar abscesses discharging into the mouth are similarly afflicted. The need for extensive public dental education is readily observed in these facts. Dental caries is the most prevalent disease of the civilized human race.

Pyorrhoea alveolaris, a disease, to quote Dr. Smith, due wholly to the teeth, is productive of some general diseases. Observations have led to the belief that the kidneys are the organs most commonly affected by the products of this particular disease. Some men claim in the past that pyorrhoea was the result of uremic poisoning, but the converse is now the general belief. That is, that uremic poisoning is the direct result of pyorrhoea, due to the constant and perpetual ingestion of mouth toxins, pus and other fetid products which are continually taken into the stomach because this inflammatory and pus producing condition exists in the mouth.

Pyorrhoea is not of systemic origin. It is amenable to treatment if taken before the inflammatory condition has progressed to a hopeless destruction of the alveolar process. As pyorrhoea is seldom or never seen in an edentulous mouth; and as extraction is always a sure cure for pyorrhoea, it

is clearly manifest that it is a disease of local origin; and that the systemic complications of the disease are the result of the disease and not its cause.

In dealing with the diseases of the special senses relating to the condition of the oral cavity, the special sense mostly affected is that of hearing. The eustachian tube, as we know, leads from the pharynx to the inner ear. Any inflammatory process or catarrhal condition of any origin, involving the oral cavity and pharynx, very often enters this opening and finds its way to the inner ear. Sometimes producing partial or complete deafness, uni- or bi-lateral. An abscess of the ear, causing a perforation of the ear-drum has been traced to an infection, caused from an infectious condition of the oral cavity.

Secondary to hearing, is the sense of smelling related to the condition of the oral cavity. This sense may be affected in two ways—either through the antrum, or directly from the pharynx forward into the nasal cavity. Infectious and other inflammatory conditions of the mucous membrane of the mouth and pharynx, if allowed to persist unchecked, occasionally proceed upward and forward, involving the nasal cavity, and simultaneously affecting the fine nerve endings of the olfactory nerve. Through the antrum an abscess may directly affect the sense of smelling. The infection may reach the antrum from an infected tooth and root-canal, and from the antrum the pus will be discharged into the nasal cavity, interfering with the function of smelling.

The effect on the sense of taste of infection in the mouth is so self-evident that it is hardly necessary to discuss it. Needless to say, any infection in the oral cavity which produces pus, must of necessity hinder the function of tasting.

The sense of sight is not directly affected, but such may be the result of a general toxemia resulting from the absorption of toxins from an abscessed condition in connection with a tooth.

The effect of a diseased oral cavity on the nervous system is readily appreciated when we see many nervous ailments and diseases disappearing spontaneously after the mouth has been placed in a hygienic or aseptic condition.

As a factor in the production of tuberculosis, the condition of the oral cavity plays a very important part. Statistics, according to Dr. Waxham, that eminent authority on this disease, state that ninety per cent. of all tuberculous patients have diseased masticating organs. Yet in treating this disease no one has made a consistent effort towards cleansing, and making aseptic, the oral cavity, wherein lurks and are firmly entrenched the most pernicious factors of lung, stomach and general systemic infection. How can tuberculosis be treated successfully if every time the patient eats he is swallowing millions of the organisms, from their breeding places in curious conditions of the masticating organs? The tuberculous patient is sent to the open air to get an abundant supply of fresh oxygen from

Nature's generator, yet at every inspiration he is inhaling the fetid odor and gases emanating from diseased teeth. It is impossible for the systemic condition to be bettered as long as such unhealthy and unhygienic conditions remain within the oral cavity.

What has been said of mouth infection as excitant and promotive of tuberculous conditions, applies with equal emphasis to the stomach, kidneys and nervous system. Many forms of stomach disorders, including even cancer and gastric ulcer, have been aroused by the ever ready septic condition of the mouth and teeth. Renal complications, accompanied generally by rheumatism, are aggravated and induced by those septic conditions of the oral cavity. Dr. Ryerson, physician and clinician in the Toronto General Hospital, stated to our clinic how the physician *now*, but only *lately*, when applied to in cases of rheumatism, always examines the mouth cavity to ascertain if some local cause could not be found there, in the condition of pyorrhoea or even caries.

On the other hand, we have infections in the oral cavity which may be due to general systemic conditions originating in some distant part of the body, and then manifesting itself in the mouth. Thus we have the ulcer appearing in the mouth, when the source of infection may have been in some portion of the body distant from the mouth.

The tongue for ages has been looked upon as a key to the condition of the stomach and bowels. When we look upon the furred tongue we know at once that all is not well with the stomach. But even then the stomach trouble may be caused by diseased oral conditions, and is again manifesting itself in the same location as it originated.

The condition of the breath alone is sufficient in many cases of diseased teeth to cause alarm. How often have we heard parents state about a child with bad breath: "It's temporary teeth are decaying." If the child's teeth are in such a condition as to cause such a foul odor, surely the child's teeth need the attention of a dental surgeon; and surely the mother of such a child can realize what a deteriorating effect such a condition must have on the child's health, at the very age in which it needs all its energy and vitality to assist in development.

But children alone are not the only ones affected with a disagreeable odor of the breath due to diseased teeth. We find this same condition very prevalent among the adult class, more often, however, due to acute or chronic alveolar abscesses, pyorrhoea alveolar, and similar diseased conditions.

It is not necessary to stop here, for we could continue enumerating many more systemic infections due to septic, diseased, or infectious conditions within the oral cavity. But enough has been said to clearly justify the statement that many more systemic troubles are caused by diseased or infectious conditions of the oral cavity than is realized by the general public, or even the medical body, to-day.

The question naturally arises how are we going to obtain relief from these conditions? This rests on three things: the education of the public, more prophylactic work by the dentists, and lastly the combined efforts of medicine and dentistry. When these three things are accomplished we will have done a great deal for the betterment of the general class of human beings to-day, and no dentist or person interested should banish his hopes or efforts until it has been accomplished. Then we can look backward and say: "Behold, a noble work has been done."

DISCUSSION.

DR. BOND: It is difficult for me to open this discussion, because my friend Dr. Dickson, failed to send me a copy of his paper.

The paper on Oral Hygiene was very good, and I regret that I cannot discuss it to any great length. It has taken some study to write such a good paper. As Dr. Harwood said this morning, we will be sympathetic rather than critical.

One cannot put too much stress on the dental education of the public; and I am only too glad to say that in the different towns in the West the schools are getting that recognition, and are getting nurses to examine the children's mouths. Even in our rural towns we have a nurse in one of our schools, and are getting on in this line. The sterilization of the mouth is really the whole key to general health, and the children cannot be too well looked after.

This great human plague, Tuberculosis is one of the great factors that we have to fight. A person really cannot speak highly enough of Oral Hygiene in relation to general health.

Since coming to the West about four years ago, these Dental Conventions have been a very great help to me. I was down at the Dental Convention at Winnipeg two years ago, and greatly value the things that I learned there. We had great meetings. I hope this will be just as good, if not better. I tried to get Dr. Harwood to get some older man to begin this discussion and take it off my shoulders, but he said I would have to get up and say something. I will refer him to some good man who can discuss this better than I can.

THE PRESIDENT: Dr. Bond did very well. This is a very important subject. Of course as to the discussion of a paper, as you noticed in the last paper, everybody is not of the same opinion; but we desire to hear from every man who has got opinions and is not afraid to discuss them. We want one or two or the whole Convention to give expression to their opinions rather than not say anything.

DR. WEISSER: I am just going to say one or two words with regard to keeping the mouth in a sanitary condition. I had a medical man call on me once, and say "I want you to overhaul my teeth and give them a little bit of a cleaning up." He said, "Do you know that I have been

giving this thing some attention, and am of the opinion that a great many diseases could be prevented by keeping the mouth in good condition."

With regard to the paper, reference has been made to some of the after effects and results of diseased teeth. Now I would like to ask how it is that a patient will present himself with an ulcerated tooth—as they call it—and say, "Of course you cannot extract this to-day as it is ulcerated. I might get blood poisoning." I have heard that many times during the past twenty-six years. Can any one tell why we should not extract an abscessed tooth? If there is an abscess in any other part of the body the pus must be removed; if there is any foreign matter, any part of clothing taken into a wound, it is removed, and why can you not have a bad tooth removed? It is foreign matter you might say. I have abstracted abscessed teeth ever since I started practice—twenty-six years ago, and have had no difficulties, if proper precautions are used. I always paint the gum with iodine, keep my instruments sterilized, and use every precaution.

Now why should people be told that? I would like some explanation as to why it should be wrong to extract ulcerated teeth?

DR. LEONARD: The field that I know best is the subject of pyorrhea. We are teaching that in the Dental College and at Clinics, and consequently I come in contact with that a great deal more than other subjects; and am perhaps better prepared in the details of that than other subjects, so would like to discuss that phase of Dr. Dickson's paper more than other phases.

In the matter of how infection enters the system there seems to be a general idea, and always has been, that the manner in which these bacteria get into the blood stream is through the alimentary tract. This infection accumulates in the mouth and is swept into the alimentary tract by the food and saliva.

The cause of pyorrhea is the collection of bacteria that grow on the surface of the teeth in every position that is not cleaned off. They grow next to the gum. Now when these bacteria lie against the gum they have a very deteriorating effect on the tissues, causing inflammation. Dr. Quigley, who has done much laboratory work on the subject of bacteria of the mouth took specimens of the deposits of the teeth to find out what the bacteria were, and how many there were. I think something like three billions per millimetre on the surface of the teeth of forty-four patients. These were streptococci, and these streptococci can be put in any culture media, and will cause such diseases as inflammation of the tissues, chorea, St. Vitus' Dance, even shingles, myocitis, inflammation of the muscles, etc. Ordinarily these streptococci do not do much harm, but if the tissue is broken as a result of inflammation, then the means is open for them to pass directly into the blood stream.

Seventy-five per cent. of devitalized teeth and abscess in the mouth are infected with streptococci, and bacteria is often carried quite a distance beyond the point where the inflammation seemed to exist.

If you come to study microscopic slides of these accumulations you will find that everything predisposes to the infiltration of these bacteria into the capillary blood vessels and lymphatic glands; and it is in this way that these bacteria get into the blood stream. Where the epithelium is broken there the opportunity is given for these bacteria to enter the alimentary tract.

Another point is that a patient might get tetanus infection, or any other infection from a dentist when extracting an abscessed tooth. When putting pressure on the forceps you are forcing bacteria into the blood. If the tooth can be pulled out so that there will be no pressure, but so many men push the tooth up before drawing it out, and that cannot fail to cause some packing of bacteria into the blood stream.

THE PRESIDENT: We appreciate Dr. Leonard's interest in this subject, and his discussion of this paper has given us very good hopes of what we are going to hear Wednesday. We would like to hear from some others on this subject. The time is not late. This is a very big subject, and one that we are only beginning to take due notice of. We would like to hear more, and would not object to some of the ladies giving us their opinion on this subject.

DR. FALLOON: Dr. Weisser referred to abscessed teeth, wondering why they should not be extracted until the abscess is better. Trouble occurs so seldom from extracting an abscessed tooth, that it looks as though it were the right thing to do. If an abscessed tooth has got beyond saving, my idea would be to take it right out; but as Dr. Leonard has just said, we cannot handle it any old way. We should know how to extract properly as well as everything else in our line. Now this is one instance in many where the public get wrong ideas, and it is for us to right these ideas.

Not long ago there appeared in one of our papers in Saskatchewan, a paper written by a person who is supposed to be giving instructions on the care of the teeth; and the instructions were to clean the teeth the first thing every morning. I do not know whether there are any dentists who think that there is only one time in the day to clean the teeth and that is the first thing in the morning. We all know that if we go to bed at night with our mouths dirty, our tongue is still, and the saliva is not flowing, so bacteria has a good chance to work at night. If we cleaned our teeth the last thing at night this trouble would be eliminated. I thought I would just bring this up as an instance of wrong ideas held about the care of the mouth.

Again, we make plates for people, and in some cases they want to know if they are supposed to take them out and put them in a glass of

water over night. This is an idea that some have that plates should be taken out and placed in a glass of water over night.

It is the same about this legislation that we are talking about. We have got to instruct the people better, and talk to our patients on these subjects; because if there is any one who knows what should be done in regard to the care of the mouth it should be the dentist. The public do not know—people who have had no instructions are not supposed to know; and we should not leave it to them to find out the errors of dentists or of legislators. We should know what is wanted and endeavor to get it; and in our practice endeavor to teach the public the proper care of the mouth.

DR. WEISSER: In cases of abscessed teeth what would really be the best treatment, if teeth were abscessed and not ready to be lanced; and on the other hand, if teeth that are abscessed are ready to be lanced? Would it not be better to lance it and let it get better for a few days, and then extract it? This is a question that crops up every day.

DR. DICKSON: Dr. Weisser was asking about an abscessed tooth. It is pretty hard to tell unless you had the tooth to look at. You should decide in your own mind whether you are going to have it out or not. My policy is to take that tooth out there and then if it has to come out. Do not leave it for the patient to go away, because if you lance it and let the patient go away they won't come back until they have the same trouble again. It is a good idea to get rid of the cause. Lancing is only for a short time. It is almost certain to return again. I would advise to take it out and treat it afterwards.

Dr. Falloon speaks of plates. If you can get your patients to wash their plates before retiring, I would suggest that this is far better than removing the plates; but if not, it is better for the patient if they do not take care of their plates to remove them and put them in a glass of water.

DR. MACDONALD: About boils; to give you my own experience, I had a case only this spring. The patient was a man of about thirty-three or thirty-four. When he came to me he had seven boils, some of them as much as two inches across, on his legs and body. I extracted an abscessed tooth for him, and at the end of four weeks his boils had practically all dried up except one, and in six weeks that one was better; and since that time he has had no boils whatever.

DR. PARKER: A man with an abscessed tooth came to me on a Thursday night about seven o'clock. I opened up his tooth, told him to go home and apply Thermofuge—it was not paining him at all, just merely sore. On Friday morning he came back to have it lanced, and inside of an hour afterwards the swelling had practically gone. Dr. Weisser was speaking about abscessed teeth. If they cannot be extracted, Thermofuge is a good friend in need.

DR. GEISER: If bacteria and other accumulations produce pyorrhea, why do they not produce it in all cases?

DR. LEONARD: I do not believe that collections of bacteria which accumulate on the gums can exist without causing inflammation of the gums. The fact that they do not right away is not particularly surprising. The culture media and saliva may not be just right for the development of the streptococci, but may allow other bacteria to grow, so that in a sense it is the systemic cause of pyorrhea. The saliva condition has to do with the growth of bacteria, and they in turn have to do with pyorrhea, just as the inflammation of the gums is originally due to the accumulation of bacteria on the teeth.

WHAT IS WRONG WITH OUR B. C. DENTAL ACT?

W. J. CURRY, D.D.S., Vancouver, B.C.

The dental profession of British Columbia now occupies a position unique in its history in Canada and one which demands immediate attention.

The condition which determined our present Dental Act no longer exists. Unfortunately laws and executives seldom keep pace with economic and social changes and so we find to-day that the Dental legislation of this province comes in conflict with our interests. In other words the legal fence some years ago erected to "protect the public" and to keep stampeders from our pastures green now prevents us following the ebb tide of population and prosperity toward the east.

According to recent official reports 100,000 people, or practically 25 per cent. of the population of British Columbia, have left during the last two years, and Vancouver City, which a few years ago boasted of 150,000 inhabitants, now contains but two-thirds of that number, and we are all fully aware that the financial status of many of those who remain is, to say the least, unsatisfactory, and consequently we of the dental profession are beginning to feel the symptoms of an economic crisis.

At the same time we know that just over the mountains spreads out the vast grain fields of Canada, and further east along the great waterways are the teeming centers of population built on the enduring basis of agriculture and manufacturing.

But since we have so far refused to accept the invitation to become free Canadian citizens, like the serfs of old we are bound to this section of British soil and cannot move.

Now it is evident that if 25 per cent of our population have left British Columbia, and if through the legislative restrictions we are not permitted to follow them, then we have to-day at least 25 per cent more

dentists here than our financial conditions warrant, and it is doubtless due to that, to at least a great extent, that dentistry has now reached the low level expressed by the advertisement of cheap and painless methods so prominent in our press.

We must realize the fact that neither professional nor any other form of ethics can long withstand severe economic pressure, since self preservation is the first law of nature, and "Charity begins at home."

It must be remembered that the Dominion Dental Constitution although subject to changes and development is nevertheless the product of the careful deliberation of men representing nine-tenths of the population of Canada, and the most advanced and prosperous portions of the Dominion, and there is no section of Canada but has expressed satisfaction with this larger freedom and enhanced power and prestige due to this federation.

We are credibly informed that the type of advertising such as we have here is unknown, and that in every province the laws protecting the profession from unlicensed operators are enforced.

On the other hand, in British Columbia, where conditions are in most respects similar to those of Alberta and the other western provinces, we have what is undoubtedly the most indecent forms of advertising displays ever known in Canada, and we all are aware that for years unlicensed practitioners have openly violated the British Columbia Dental Act, and those in authority are either powerless or unwilling to prevent it.

Considering the position we now occupy, instead of our dictating terms as was suggested by the opponents of the Dominion Federation at the recent convention held in this city, we should be willing and anxious to join the other provinces without cavil and should consider ourselves fortunate in being accorded that privilege.

DENTAL LEGISLATION AND EXAMINING BOARDS.

It is doubtless true that Dental Legislation like all others of the same type is based on class interest as a reason, and the "interest of the public" as an excuse, and yet legal enactment of this type in our case does represent professional and scientific progress and therefore the common good.

The passing of any dental act is, in fact a land-mark in the evolution of dental art and science, and is a long step in advance of the "free to all, go as you please" stage, which preceded it, horrible examples of which we so frequently meet in western Canada.

Now since a certain province or state will move first in this direction of protection for "the public" and the "business" we must necessarily begin with local legislation such as prevails here, but when that point is reached where the majority of the provinces of Canada, for instance, have passed dental acts, then the next logical step is a federation and general standard enabling practitioners to move freely from one province to another and this stage was entered upon in Canada at the organization of the Dominion Dental Council.

In 1905 all the provinces in Canada except British Columbia and Quebec entered the federation. The reason why Quebec did not join the union was due principally to bi-lingual difficulties. The reason why British Columbia remained in the same class as Quebec was mainly because the profession in general was kept unacquainted with the advantages that would result from that step, and was led to believe by those in control that once the bars were thrown down the stampede from the east would bring on financial ruin.

Our examining board as it now is represents a past stage in Canadian dentistry. It is the deciduous tooth obstructing the eruption of the permanent ones, the tail of the tadpole making itself believe that the frog still needs it in her business.

It is high time to realize that organs are made to serve organisms, not vice versa, and that when they cease to function they must be eliminated if evolution is to continue. Of course there are chicks that never break the shell and tadpoles that do not become frogs, but the Dental fraternity of British Columbia does not belong to that class and is quite robust enough to break its shell of provincialism and become full grown, just as the medical men of British Columbia have recently developed into true Canadians through their Dominion Act, and we are fortunate in now being in a position to throw off the restrictions under which we have lived so long.

We are all aware of the fact that for several years in which the influx of population took place in British Columbia the average practitioner was sorely overworked and the public was poorly served. Our act interfered with the operation of the law of "supply and demand." We had too much dentistry and the public not enough. It was during those boom years that so many unlicensed operators became in evidence. The public was told that these were the benefactors of the people and the only safeguard against our monopoly to hold up the public. There was no barrier to restrict the coming of carpenters, mechanics, business men and people in general, while our act served as a club to keep out men who should have followed to attend to their dental requirements, and as in all cases this interference with the social circulation; the law of supply and demand produced an abnormal and unhealthy condition.

To-day the same legislative pressure is still operating. We have refused the invitation to affiliate with the other provinces and so some of us who desire to go eastward are prevented from following the exodus of the people on whom we depend for a living. The fence erected to keep others out now keeps us in and so this pressure which a few years ago produced anemia now results in a congested condition of British Columbia in its relation to the Dental surgeon. There is not another part of Canada where "prices" are so low as here when considering the cost of living.

OBJECTIONS TO OUR DENTAL LEGISLATION.

We all know how comparatively easy it is for recent graduates to pass our Dental Boards. Their brains are surcharged with facts and figures of chemistry, anatomy, etc., and they usually go through with flying colors.

We also know that no man out of college even a few years can pass their theory without months of hard work and even then the chances are he will be turned down. Yet we can all appreciate the fact that as a rule the man fresh from school is the one to avoid, and the man who has been gaining practical experience while he has been forgetting the most of his pre-graduate subjects is the one we wish to have attend to our dental imperfections.

This means that instead of dental acts operating in the interests of the "Dear Public" and to "raise the standard of the profession" it must necessarily work just the other way. It pays a premium on theoretical generalities and superfluities and penalizes just that man who possesses knowledge which comes from experience in serving the public. In fact the fresher the candidate is for our provincial honors the better chance he has in passing, while the more experienced man is regarding his duties and responsibilities as a dental surgeon, the greater pressure the Dental Acts exert to keep him out.

The man who has been in practice for say five or ten years would even have to take up subjects from new text books and would in most cases be compelled to throw up his business, and how many could do this? The result is the older men never try the examinations much as they might like to move.

At the same time it is safe to say there is not a professor of operative dentistry in any of our universities who could pass our British Columbia Board without months of special work and it is equally certain that not one of our local examiners could honestly pass all their board examinations without months of preparation.

Another injustice is that the recent graduate who needs no change can move if he so desires, while the man who has been at the work many years and whose health demands a change of climate or who through family relations desires to move is sometimes compelled to sacrifice health and happiness because of these laws which "protect the public" at the expense of economic freedom.

There is no class of men to whom a change of climate and surroundings is sometimes more necessary than for the dentist. A fresh field and new faces has usually a stimulating effect and a change is a rest. A man has a chance to start a new stage in his career and profit by the mistakes he leaves behind him.

The fact is what we most need is not pre-graduate theory so much as post-graduate courses.

We want to go ahead and not backward. We want to understand the business end of a practice and the want of this knowledge is where so many good men fall down.

We need more co-operation and less competition, and these subjects are not contained in the curriculums of our provincial examining board.

FOR A UNITED CANADA.

The proposition should appeal to everyone of normal mentality that a man qualified to treat natural teeth and make artificial ones in Vancouver should be good enough for Calgary, Winnipeg, Toronto or Halifax; and if he does satisfactory work in the Maritime Provinces he should do for any other part of Canada.

What excuse have we any longer for this "Chinese Wall" around this province and what right have those who support it to talk of professional ethics?

We have throughout Canada the same system of dentistry and the same standard of general education. We have a uniform standard of living, the same language and the same flag; and we are members of the same empire. It is high time we became free Canadian citizens in the full sense of the term.

Our British Columbia Dental Act has fulfilled its mission in its present form, it now blocks the road to progress. There is nothing to lose and everything to gain by our union with the other provinces.

If we now refuse to accept the conditions of the Dominion Council because it does not conform to our ideals, we would be like a hungry man who would not take a loaf of bread because he could not get the bakery or a better comparison would be a convict who refused to have his leg irons off unless he was given all the other requisites of liberty at the same time.

We must remember that freedom is only relative, and if the Dominion Dental Constitution in its present form does not meet all our desires, by uniting with the Federation we will possess much greater influence in moulding it to our ideals than we can possibly exercise if we stand aloof and refuse the hand of co-operation and fellowship which has been held out to us so long.

Selections

DENTISTRY MUCH IMPROVED IN ONTARIO IN RECENT YEARS

Opinions of a lay woman, published in the Toronto Weekly "Star."

It seems to have been an old tradition handed down from age to age that one must have an everlasting horror of a trip to the dentist's and put it off until the very last moment, thereby laying up for yourself heaps of additional suffering when you finally do get your courage up to the going point. That might have been an excusable point of view in grandfather's time, when dentists did not know nearly so much as they do now, but you must not forget that in this century of progress dentistry, like every other science, has made wonderful strides, and is always becoming easier for the patient, and therefore much harder for the student, since he must learn more and more each year.

Since I was taken through our splendid School of Dentistry the other day and glimpsed a little of the wonderfully perfect training the students receive in their four years' course, I know that the next time I have an unruly tooth I shall just seat myself in the chair with almost as much confidence and no more fear than if I had stepped into one of those lovely chairs that roll so smoothly along the Boardwalk at Atlantic City. Why this sudden change of heart? Well, in the first place, I shall know that my dentist is a graduate of the Royal College of Dental Surgeons (for absolutely none but graduates of this college are allowed to practise anywhere in Ontario), and being a graduate I know there is nothing worth while knowing about the peculiar little dispositions of teeth that he does not know, and no new methods of treatment are discovered that he does not learn, and, moreover, that he is not maliciously going to hurt as much as he can because in all his course he has been taught only gentleness of touch and the quickest possible alleviation of suffering.

It is not every youth who may become a dentist, much as he would like to, for in his character he must combine the intuitive skill of the mechanic, the subtle touch of the artist, the discerning eye of the physician, and the keenly alert and steady nerves of the surgeon. Now, you really didn't think all these qualities were necessary, did you? But they are. Neither do all the boys who make up their minds to study dentistry—at first! But they very soon learn the great importance of thoroughly getting that definition of a dentist thoroughly imbued in their understanding, and if they don't—well, almost every year from the freshman class there are five or six boys who are kindly, but firmly, advised to take up some other calling since the instructors who have been keenly watching their work know that never, never

will these boys make the capable dentists that the college wishes to send forth. So they don't let them go any farther than the freshman year, which, after all, is a real kindness, isn't it?

\$185,000 EQUIPMENT.

This School of Dentistry is not a very old school, for it was only organized in 1875, and don't you think it speaks pretty well for the work of the R.C.D.S. and for the clever capabilities of our Ontario boys, too, that now they occupy a magnificent building of over 40,000 feet of floor space, and which, with all its very modern fittings cost over \$185,000? And the very fact that this fine building with all its clever professors and its 320 students is situated right in our own city, should make Toronto puff out her chest even more with civic pride than she does when she thinks of all it must mean to her citizens. The great majority of the students are, of course, young men (they must be 21 before they can enter), but there are three bravely determined young ladies now attending and doing their best to prove that woman is equally at home in every profession. It is really very strenuous work for a woman, though, since she must be on her feet practically all the time. There are some very clever women dentists, however (indeed we have six right here in Toronto), but I really don't think women are going to take up this sort of work very extensively. The college, however, admits women students on the very same conditions as men, and moreover, chivalrously provides a nicely furnished room for their exclusive use. And lately when the sophomores gave their annual dinner to the freshies, why they just sent along theatre tickets for the freshettes and the lady sophs., and so everybody had a perfectly lovely time generally.

First of all, if you wish to study dentistry you absolutely must have your matriculation or a teacher's certificate, but if that certificate doesn't include Latin it is plainly up to you to dig and delve among your verbs and nouns and similar elusive things so that you may secure at least 40 per cent. on each of the two Latin papers you will be required to write on. Then you fill out a student's application, in which you promise, among other things, "to promote good fellowship among my classmates and to maintain and protect the reputation of my Alma Mater"; pay your fees, and you are really on the way. All you have to do now is to buy your instruments and appliances and work like a Trojan for the next four years. If your work is satisfactory and you pass all the examinations you will receive a certificate to practise dentistry in Ontario and to proudly write L.D.S. after your name and to receive your D.D.S. from the University, which, being translated, means Licentiate of Dental Surgery. Yes, and you may feel highly competent and exclusive, too, for you know that graduation from the dental colleges of England, or of the other Provinces, or from foreign countries does not qualify for practice in the Province of Ontario. Ontario, be it understood, has established a standard unto herself, and a very high one it is, too.

AGE OF SPECIALIZATION.

Then, because this is an age of specialization, you may wish after graduation to pursue your favorite subject still further, and become, for instance, a specialist in orthodontia, which is the correction of irregularities of the teeth, or a specialist in prosthetic work, which is artificial teeth and plates. Oh, there is no limit to ambition!

Even to a person who knows no more about teeth than that a good substantial set of her own are a very convenient thing to have about (and that almost ever since the very first tooth made its appearance she has had to have various, more or less trying, things done to them to keep them in their appointed spot), this big building on College street is a most interesting place, and I just wanted to know exactly what these boys really did study. So up we went to the freshmen quarters, and there I got an illuminating idea of my own vast ignorance when I heard all the most important sounding things they had to learn about: Dental anatomy, histology, prosthetic dentistry, and a great deal of laboratory work as well. Histology, I'm very anxious to tell you about, because I hadn't the most remote idea myself what it meant until my visit to the college. Well, it is the study of the minute structure of the tissue of the body, and in order to be studied properly must be done from actual observance of healthy tissue. This is secured from the lower animals, such as rabbits and guinea pigs, for various reasons, but mainly because people have a pronounced distaste for allowing their own healthy tissues to be spied upon by inquisitive students, at least while they have any say in the matter. So rabbits and guinea pigs are the next best thing because their tissues are so much like those of the human body.

There are 108 in the freshmen class this year, and they are put at actual practical work in the laboratories just as soon as possible, for the same reason that a good musician is always started at an early age. The fingers are more sensitive and do not get a chance to become stiffened, and moreover, the very best way for them to learn anatomy is to actually model the teeth, first from modeling clay, then from plaster of paris, and later by carving out of vegetable ivory. This is called making "artificial dentures." The students all wear long khaki-colored coats in the laboratory and look very business-like, indeed. By the way, each year has its own distinctly separate laboratory, and rash indeed would be the other year man who ventured out of his own domain. There is a very real and stern "class distinction" I can tell you!

This is how they first learn about cavities of decayed teeth. There is an immense set of teeth (about 20 times the actual size of teeth), with various types of cavities in them, and they are carefully observed. Then the student makes a model of the tooth and cavity from modeling clay, which is reproduced in plaster of paris; next, getting more experience, he carves one out of vegetable ivory, and lastly he studies the actual cavity in a real, true

molar that some obliging patient has bequeathed the college. In short, the very same cavity is filled three times, and that is long, long before the student ever comes in contact with a real live patient.

MYSTERIES OF BACTERIOLOGY.

Not until you reach the junior year are you allowed to delve very deeply into the mysteries of bacteriology and chase the festive germ to its hidden lair, drag it forth where you can watch intently its most diabolically deceptive habits with the very praiseworthy and ambitious object in view of somehow frustrating their knavish tricks. It was sort of a thrilly moment when one heard that almost every known germ had paid at least a fleeting visit to this room, but they assured me that they had all been cultured, incubated, baked, and hidden away behind fortifications of cotton in sterilized bottles and test tubes until, for the time being at least, they were harmless. I saw a germ, too. Germs, I should say. They didn't look so terribly wicked through the microscope, though. Just a lot of funny, sprawly little dots. They say about a thousand of them live in a spot about the size of a pencil mark. In former years all this part of the work had to be studied from books and lectures, but now, thanks to increased facilities and the strides of science, the student has the wonderful advantage of actual observation.

The seniors or fourth year men, taking lectures in medicine and surgery, history and ethics of dentistry, dental jurisprudence, electro therapeutics, and dozens of other subjects as well, are nearly through their course and do a great deal of work in the infirmary. This is a huge room running the full length of the building, with windows on three sides, and containing 50 chairs. All work done in this infirmary is entirely free, only costing the patient the actual cost of materials used, and is done entirely by the students under the watchful supervision of a demonstrator, who carefully inspects every process before the next phase of the work is undertaken. If a condition is encountered which is not quite understood an X-ray photo is taken and the cause of the trouble thus disclosed. It is a very busy place, indeed, this infirmary, and is patronized by all sorts and sizes of people, who must make their appointments and receive their chart in the office downstairs. A nurse is also in attendance. Physicians are coming more and more to understand that all sorts of aches and pains may be caused by teeth troubles, so, sometimes, almost too quickly, they send the patient off at once to have his teeth removed or filled. On Monday and Thursday mornings there is a class for the study of the irregularities of children's teeth, and this is called orthodontia. Sometimes a little patient will require treatment for two years and then it is arranged that some students shall stay through the holidays to look after these cases.

CANADIAN DENTISTRY

As appeared in Panama-Pacific Congress Programme, 1915.

While dentistry in Canada partakes very largely of the methods of education, practice and administration of its good neighbors to the south, it has some marked characteristics of its forebears, the French and English. Out of a union of the three sources mentioned is rapidly developing a Canadian dentistry having distinct characteristics. In methods of technique and office management the Canadian dentist cannot be distinguished from his American confrere, but in education there is much of the British methods followed. The preceptor method of instruction obtaining in Great Britain prevailed longer in Canada than in the United States, and is in vogue still in some of the Provinces where dental schools do not exist. There is more reliance in the early education of the dental student and the time spent in study than upon a quick acquirement of technical procedures. The French have influenced dental education in artistic and professional aspects.

In dental laws and administration Canada holds a unique position. The first dental law in existence was passed by the Legislature of Ontario, which was closely followed by New York, and then by Quebec. The profession in each Province has an independent dental law, controlled by the profession, though in one or two Provinces the Legislature appoints a part of the members of the board. Each board has full control of the standards of preliminary education, professional education and professional conduct after admission to practice. The boards have power to give those admitted to practice the title of L.D.S. A license from the board of one Province does not admit to practice in any other Province.

The Dominion Dental Council, formed by an appointee from each Provincial Board, sets an examination each year for candidates who wish to obtain a certificate, which permits the holder to practice in any Province in the Dominion. There is also provision in the by-laws of this council allowing those of certain professional standards which were obtained before the council became organized to transfer from one Province to another.

There are four dental colleges, three of them departments of regularly organized universities, and one owned and controlled by the profession of Ontario. Maritime Dental College, Halifax, is the dental department of Dalhousie University, Laval Dental College a department of Laval University, Montreal; Dental department of McGill University, Montreal, and the Royal College of Dental Surgeons of Ontario, Toronto. The Provincial universities of the Western Provinces have made provision for dental departments, but have not yet organized a teaching staff.

There are two kinds of dental societies in Canada—official and voluntary. Official societies are those organized under the provisions of a legislative Act, and govern the profession of the Province; all others are

voluntary. The Canadian Dental Association, the national society, holds its meetings every second year. This society takes up all questions of a national character, *e.g.*, relation of the profession of Canada to the profession of other countries; the general questions of dental education and dental laws; the relation of the profession to the public and the State.

The society is giving a thousand dollars in prizes next year to encourage research work.

The public and the Government of Canada are alive to the value of dental services. The Boards of Health of some of the Provinces have dentists acting upon them. Instruction of the public in oral hygiene is officially organized in all the Provinces. Dental inspection and treatment of school children are officially carried out in all the large centres, and some rural districts.

The Government of Canada has given dentistry the greatest official recognition yet. Since a few months an army dental service has been organized upon the same basis and with the same rank as any other service in the army. The organization and management is separate from the medical or any other service. It is thus placed upon a par socially, officially and as a value to the public with all other professions or services under the Government. Dentistry to-day stands high in the minds of the people of Canada.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII. TORONTO, AUGUST 15, 1916.

No. 3.

WHAT HAS DENTISTRY TO OFFER AS A PROFESSIONAL CAREER?

At this season there are hundreds of young men in Canada who have completed the matriculation examinations and have not yet decided what calling in life they will follow. Of the many professional callings open to young men of capacity, dentistry offers a more attractive prospect just now than at any other time in its existence. It has become clearly defined and separated from other callings. It has passed beyond the purely mechanical stage: a calling demanding the best brain and energy of the ablest men in our country.

Few callings demand such a variety of attainments as dentistry. There is full scope for mechanical and constructive ingenuity. A dentist without an appreciation of the artistic fails in a department of his calling which is noticed not only by his patients, but by others. There are few occupations in which there is such a demand for exactness of detail. Things which are good enough or will do are usually a total failure in dentistry. Not only a

total failure mechanically, but result in dire consequences to the patient's health. The late Dean Willmott often said, and it is worth repeating, "that he knew of no calling in which a broad culture was of equal money value as in dentistry." The dentist is associated by the hour with the most refined members of society, and if he is unable to be at ease, it is much to his disadvantage. A dentist without an appreciation of ethics is a danger to society. Patients place not only their purse, but their health in his keeping. A knowledge of human impulses and human desires makes possible a successful dental practice. There is plenty of scope in dentistry for the exercise of true business instincts.

To the honest, energetic, capable young man, dentistry offers as good an opportunity to serve humanity and be compensated as any other calling in life. Most young men enter dentistry because some friend or some one they knew said dentists made a great deal of money and did not have to work hard for it. Such notions often attract young men, who soon find out that as a means of becoming rich as the head of a business enterprise, it turns out to be a mistake. The statement so often made that a dentist does not have to work hard to make a fat living, also turns out to be a myth. The fact is, a young man of fair ability and good health, with attention to his duties can make a comfortable living for himself and those dependent upon him. He can enjoy good literature, his friends, his family and his professional brethren, to an extent not appreciated by many less fortunately situated. A dentist, next to a physician, gets very close to the hearts and lives of his patients. They trust in his judgment and display a confidence in him that is a joy and a satisfaction not bought with money.

Canada offers unusual opportunities for studying dentistry. The profession is distinctive, having many of the best characters of both Great Britain and our neighbors to the south of us.

There are four colleges in Canada: Dalhousie, in Halifax; Laval and McGill, in Montreal, and the Royal College of Dental Surgeons in Toronto. The course is four years, of seven or eight months each, with the total fees about five hundred dollars. Both the study and practice of dentistry are attractive. There is enough mental effort to engage the best brains, and enough technical to give relief from brain fog.

In this day of removing teeth rather than leaving them as a menace to health, the prosthetic dentist must be prepared to improve his art. The operative dentist must develop his skill sufficiently to equal the present demands. Root treatment and periodontal infections must get more attention or the prosthetic dentist will overtake the operative dentist.

CANADIANS AT YPRES

Holding fast to Ypres salient,
 Men from Canada's broad zones,
 Men who dug for dust at Dawson
 Under many midnight suns;
 Men who dared the deep Atlantic,
 Speared the seal among her floes;
 Whalers from the broad Pacific,
 By whose marge the tall pine grows.

Riders, ranchers from the prairies,
 They who trailed game o'er great snows;
 Bushmen first to blaze the highways,
 Giants fall where'er he goes;
 Men who bore 'gainst biting blizzards,
 Toiled beneath the summer's sun,
 Miner, merchant, clerk and yeoman,
 Bound with Britain all as one.

Holding fast while heavens falling
 On them thunderous bolts from blue,
 Very earth in oscillation,
 Very air a blinding hue;
 Parapet and sandbag flying
 As dry dust before the blast,
 Piled on living, dead and dying,
 Not a soldier looked aghast.

Not a soldier failed or faltered,
 Buried oft and up again,
 Bathed in blood and bowels of battle,
 All were heroes, supermen.
 Choked by charnel, lethal gases,
 Blown aloft and tumbling down
 Pieces on their living comrades,
 Though by murderous monster sown.

Not the phalanxes of Sparta,
 Nor the Roman legions bold,
 Never dusky sons of Carthage,
 An inferno such could hold.
 Yet they rallied in the shell holes,
 Remnants of that gallant corps,
 Called the swarming Huns to "Close in,
 Fight it out, we'll give you more."

But alas! the slain, the buried,
 The unarmed can strive no more;
 O'er the debris of the trenches,
 For the moment hostiles pour.
 Brief the tenure by the Bosches
 Of those points so costly gained,
 Allied guns now devastating
 Unerred, death deluging rained.

Then the rallied reinforcements
 Drove with bayonet, flung with bomb,
 Death to dug-out, slew at shelter
 Saxon, Wurtemberger, Hun.
 Hoisted to the breeze the slogan,
 "This salient give up? Never!
 With Beaver Men behind the guns;
 The Maple Leaf forever."

M. F. CROSS, D.D.S., L.D.S.

Ottawa, July 22, 1916.

RESULTS OF THE RECENT DOMINION DENTAL COUNCIL EXAMINATIONS

PASSED IN MEDICINE, SURGERY AND ANAESTHETICS.

E. H. Clark, B. E. Eaid, W. R. Fraser, Fred G. Garvin, G. E. Gibson, F. F. McLellan, R. G. B. Musgrove, N. B. McLennaghan, M. H. Nichols, H. J. D. Robinson, G. A. Sproule, A. C. Steele.

PASSED IN PHYSICS AND CHEMISTRY.

H. J. Adamson, H. H. Abell, W. H. Barber, Kenneth Berry, E. H. Clark, A. G. Crozier, G. R. Davison, C. H. Fulford, G. L. Gibson, O. Hart, T. Ingram, J. B. W. Long, J. G. Lebbetter, R. A. McCormack, N. B. McLennaghan, G. R. Murray, H. J. Mullett, Hubert Maranda, J. A. Plunkett, M. G. Robb, G. A. Sproule, S. W. Sproule, G. N. Stultz, M. A. Thompson, J. W. Turner, C. Wood.

PASSED IN ETHICS AND JURISPRUDENCE.

E. H. Clark, B. E. Eaid, W. R. Fraser, G. E. Gibson, R. G. B. Musgrove, N. B. McLennaghan, G. A. Sproule, H. J. D. Robinson, A. C. Steele, F. G. Garvin.

PASSED IN PATHOLOGY AND BACTERIOLOGY.

E. H. Clark, R. C. Crosby, H. W. Ferguson, G. L. Gibson, R. G. B. Musgrove, N. B. McLennaghan.

PASSED IN BACTERIOLOGY.

M. P. Nichols.

PASSED IN PHYSIOLOGY AND HISTOLOGY.

H. J. Adamson, E. H. Clark, A. L. Crozier, L. R. Davison, L. M. Finnighan, G. L. Gibson, O. Hart, R. A. McCormack, N. B. McLennaghan, J. A. Plunkett, M. G. Robb, G. N. Stultz, J. W. Turner.

PASSED IN OPERATIVE DENTISTRY, (PRACTICAL).

H. C. Arnott, R. H. Alyoe, H. R. Conway, E. H. Clark, L. J. Craig, B. E. Eaid, W. R. Fraser, R. J. Godfrey, F. G. Garvin, G. L. Gibson, H. E. Goodhand, C. L. Grant, T. F. Hart, R. G. B. Musgrove, N. B. McLennaghan, L. D. McLaurin, R. H. Mills, G. A. Sproule, A. C. Steele, H. L. Smith, D. T. Siegel, W. J. Taylor.

PASSED IN ORTHODONTIA.

E. H. Clark, B. E. Eaid, W. R. Fraser, F. G. Garvin, G. L. Gibson, R. G. B. Musgrove, N. B. McLennaghan, M. P. Nichols, H. J. D. Robinson, G. A. Sproule, A. C. Steele.

PASSED IN MATERIA MEDICA AND THERAPEUTICS.

E. H. Clark, R. C. Crosby, L. R. Davison, H. V. Ferguson, G. L. Gibson, R. G. B. Musgrove, N. B. McLennaghan, M. P. Nichols, John W. Turner.

PASSED IN ANATOMY.

H. J. Adamson, H. H. Abell, W. H. Barber, K. Berry, E. H. Clark, A. L. Crozier, R. C. Crosby, L. M. Finnighan, C. H. Fulford, T. L. Gillispie, O. Hart, G. Ingram, C. L. James, I. B. W. Long, R. A. McCormack, R. G. B. Musgrove, N. B. McLennaghan, G. R. Murray, H. J. Mullett, H. Maranda, M. G. Robb, G. A. Sproule, S. W. Sproule, G. N. Stultz, M. A. Thompson, J. W. Turner, C. Wood.

PASSED IN OPERATIVE DENTISTRY (PAPER).

E. H. Clark, B. E. Eaid, W. R. Fraser, E. G. Garvin, G. E. Gibson, R. C. B. Musgrove, N. B. McLennaghan, H. J. D. Robinson, G. A. Sproule, A. C. Steele.

PASSED IN PROSTHETIC DENTISTRY AND METALLURGY (PAPER).

E. H. Clark, B. E. Eaid, W. R. Fraser, F. G. Garvin, G. E. Gibson, R. G. B. Musgrove, N. B. McLennaghan, H. J. D. Robinson, G. A. Sproule, A. C. Steele.

PASSED IN PROSTHETIC DENTISTRY (PRACTICAL).

E. H. Clark, B. E. Eaid, W. R. Fraser, F. G. Garvin, G. E. Gibson, H. James, E. T. Jamieson, R. G. B. Musgrove, N. B. McLennaghan, H. J. D. Robinson, G. A. Sproule, A. C. Steele.

Obituary

DR. MACLAURIN KILLED

On June 16th the sad news was received that Lt. Howard MacLaurin had been killed in action on June 14th, during one of the severe engagements which occurred about that time. Dr. MacLaurin was born



Dr. H. J. MacLaurin (Lieut.), Winnipeg, Man.

at Vankleek Hill, on July 6th, 1887, and was accordingly 29 years of age. He was the son of Mr. and Mrs. John R. MacLaurin, a prominent merchant of that town. He was educated at the Vankleek Hill Collegiate

Institute and matriculated in the R. C. D. S. in the fall of 1905 with the class of '09.

After graduation he took his D. D. C. and practised in Winnipeg until September 8th, 1914, when he enlisted as a Lieutenant in the Cameron Highlanders. On his arrival in England he was drafted into the 16th Canadian Scottish.

He was wounded in March, 1916, in the forearm, but returned to the trenches. Early in June he was again wounded, but owing to the scarcity of officers he refused to go to the hospital, but stood to his post until the end, which came on June 14th.

Word since received shows that he was killed while leading his company into battle, and was recommended for the Military Cross. His body was found and was buried beside that of his younger brother, Douglas, who was killed last April. A third brother, William, is also in the trenches.

A union memorial service was held in Vankleek Hill. Lt. MacLaurin was a Baptist, but the service was held in the Presbyterian church to accommodate the large crowd present. A memorial service was also held in Nassau Street Baptist Church, Winnipeg, of which the deceased was a member and this was also attended by a large number.

The following letter was received by Mr. and Mrs. John R. MacLaurin from their son, Lieut. Howard MacLaurin. It was written three days before he was killed:

June 11th, 1916.

My Dear Mother and Father:

We are going into a rather big affair and in the course of a few days it may be that I will have received my call to join the ranks of those that have gone. I want you not to mourn for me if that should be the case. I am quite prepared to go and shall see Douglas when I get there.

Give my best love to all the children and any friends of mine. Thank you all for your goodness to me and regretting to be the cause of any sorrow to you,

I am Your Loving Son,

HOWARD.

DR. CHARLES AUBREY McELHINNEY

Dr. Charles Aubrey McElhinney died at Ottawa on July 16th after a long and painful illness which he bore with philosophic patience. He was born at Truro, Nova Scotia, in 1872, attended the Collegiate Institute at Ottawa, and graduated from the School of Dentistry in Toronto in 1896. He practised in Ottawa until a few months ago, when an attack of pleurisy confined him to his bed.

While he was quiet and unassuming, he regarded his profession very highly, studied assiduously and as a result enjoyed for a long time an excellent practice until failing health forced him to take frequent periods of rest.

He was a member of the Ottawa, the Eastern Ontario and the Ontario Dental Societies, and though frequently attending the meetings, seldom took part in the discussions. He was, however, always deeply interested in everything pertaining to the welfare of his profession and observed its strictest ethical details.

While his health remained good he was a steady student and a comprehensive reader of general literature, philosophy, medicine and dentistry, loved good music, and found time to turn out some fine specimens of amateur cabinet work. His only out-of-doors recreation was on the water, where he was an expert with the sailing canoe and later with the motor boat, several of each he himself built. During the winter week-ends he frequently met a little coterie of intimates where a book, a play or current article would be read and discussed. Herein he would forget his usual reserve and uncover a wide reading and a spirit of just but friendly criticism. Herein also will he be sadly missed. His social circle was small and he had neither political nor religious affiliations beyond a deep loyalty to his country and a philosophical attitude toward life.

He bore his sufferings without complaint and died, as he had lived, without fear. He was kindly, just and a good brother.

M. G. McE.

FOR SALE.—For \$100. One complete Heidbrink Automatic Anaesthetizer, with Electric and Alcohol warmer. Is new. Has only used one cylinder of gas. Apply, G. A. Liscumb, D.D.S., Drayton, Ont.

WANTED—A GRADUATE of a reputable Dental College, since February, 1913, to take position as operator, by F. W. Glasgow, corner Portage and Donald Streets, Winnipeg, Man.

Dominion Dental Journal

VOL. XXVII

TORONTO, SEPTEMBER 15 1916.

No. 9.

Original Communications

PRESIDENT'S ADDRESS

F. W. BARBOUR, D.D.S., L.D.S., Fredericton, N.B.,

Read before Canadian Dental Association, Montreal, September, 1916.

GENTLEMEN,—The eighth biennial session of our organization opens to-day under most favorable auspices. For the third time this great city of Montreal opens its portals to us and bids us welcome. This association had its birth in this city, and here the men of wide vision and clearness of judgment laid their plans, and laid them well. Combining with these, as it did, those of Dominion-wide reciprocity in registration, there was thus initiated a line of progress that has led to an advanced position in organized attainment that is exceptional.

Not only our own profession, but others have appreciated the value of the work then done, as is evidenced by the fact that it has been used as a basis for similar endeavor by others.

It is within the knowledge of many that the wisdom of holding sessions this year, when the war and its attendant activities were occupying so much attention, was seriously questioned; and it was only after what was considered a satisfactory canvass of those who were believed to be most interested that a decision was arrived at. While many doubted that success would be achieved, there was a majority in favor, and it was finally decided to leave the matter to the members of the profession in this city. That such was wise can be judged by the enthusiasm that has been shown in preparation, and the results that are now presented to us.

I am convinced that the hours that shall be spent as a result of this decision will be entirely our gain.

Correspondence involved in anticipation of these days' gatherings has been of a pleasurable character, enlarging on acquaintanceship and strengthening the bonds of friendship among those whose good-fellowship has been so largely valued.

At this stage, and so that due credit may be given where it is deserved, it must be stated that the results that have matured and are to be evidenced at the meetings, are wholly due to the untiring work of the local committee through its sub-committees.

THE GREAT WAR.

How little did we who so happily and profitably met in Winnipeg two years ago realize that there was to come into our experience in the interval, such stupendous and world-absorbing events. Not many weeks after we had separated came the shock of warfare, in the following up of which, this, our country, did so nobly.

Destruction took the place of construction to a degree that appalled but did not dismay. The wheels of progress were held back and seemingly stayed, but the indomitable spirit of our nation held firm, and with rare exceptions all placed their shoulders where most effective, till now it is evident that apparent disaster was not unaccompanied by much that will result in material good. We hold up our heads with pride when we contemplate the endurance, the energy and the sacrifice that has been manifested on all sides.

RE-ORGANIZATION.

At the Winnipeg meeting expression was given to the feeling that the time had come for a reorganization of the Canadian Dental Association, so as to enlarge its usefulness and to make it still more comprehensive in character.

Up to the present our cohesive power has been too evanescent, the interim value of our association having been far below its possibilities. The fact that membership was constituted simply by attendance at the meetings and paying the required fee led to a natural lack of interest on the part of most of those who had attended.

It is true that certain committees served as desired, and much good work was therefore accomplished and appreciated; but at the same time it was realized that something of a more comprehensive character was needed that would bring this association into more intimate relation with provincial and other societies, so that they might be of mutual value.

Two years ago there was a committee appointed to take this matter into serious consideration, and to recommend at these sessions some desirable improvements. That such a report is to be presented is much to be desired, and the above reference to the importance of the matter is made so that if it is not intended that it shall be brought up in any other way, it may be made a matter of discussion at this meeting.

CANADIAN ARMY DENTAL CORPS.

With no intention of intruding on the province of the Army Dental Corps in its report, it is impossible to refrain from reference to its work, particularly mentioning those who so faithfully pressed the matter before the authorities, and to those who have been so helpful in providing means to secure some of the necessities not at first obtainable through the regular channels.

In thinking of those who have engaged in military service overseas it may indicate in some sense our appreciation if a cable to that effect

be prepared and transmitted through Lieut.-Col. Armstrong, and I would suggest that authority be given to the secretary of this association to do so.

DENTISTS SERVING OUTSIDE THE CORPS.

In mentioning those who are serving in the home land or overseas we must not omit mention of those of our profession who have given over their time and effort to other branches of loyal endeavor, and have gone, or are preparing to go, where they may assist in these glorious efforts for the salvation of civilization to its highest possibilities.

With sorrow we remember that some of these have paid the supreme sacrifice, and we now can but pay reverence to their memories and give tribute to their nobility of purpose. We unite in extending to those that are bereaved our deep and sincere sympathy.

OTHERS WHO HAVE GONE BEYOND.

Others than those just referred to have finished the course and have gone to their reward. Some familiar faces are missing from this gathering whom we will never see on this earth again. The void thus made will be difficult to fill. We remember with gratitude the helpfulness and instruction that they contributed in past meetings.

I have in mind particularly the late Dean Willmott, who, though absent in body, the results of his efforts and advice are to-day manifest and will be for years to come.

I would like to extend the list to others who are in the minds of us here, but time will not permit.

OUR INCREASING RESPONSIBILITY.

One is impressed by the increase in the demands that are made upon our professional ability to conserve the well-being of the community in which we are placed.

While knowledge is undoubtedly power, it at the same time brings with it obligations that press strongly for attention.

During the period between this and our last meeting unprecedented appreciation of the value of oral hygiene has developed. The realization that septic mouth conditions produce secondary infections brings us face to face with filling a place in health preservation that was not formerly conceivable.

With this knowledge on our part and recognized more and more by the medical profession, it is incumbent upon us to be alert, studious and sincere in our efforts if we are to make our possible contribution to human welfare.

A more positive knowledge of the dangers of apical infections and the difficulties of perfect canal procedure has been more thoroughly impressed upon the operator, so that more careful thought is necessary in contemplating the necessity of pulp destruction, and the bringing into effect of perfect canal cleansing and filling.

WHAT HAS THE FUTURE IN STORE FOR US?

The dental profession in Canada must prepare to contend with such problems as will arise in the years following the cessation of the great war. The prediction is made that there will be a tremendous immigration and of a quality that will be greatly in need of dental services. This large increase being added to the already too sparsely supplied population, there will arise a condition that will be overwhelming unless immediate steps are taken to fill the need.

SUGGESTIONS AS TO SOLUTION.

Wiser heads than mine are necessary to present a sure method of conquering the difficulty, but a few ideas may be worth consideration:

1. Temporary assistance toward dental education.

A campaign of education is recommended under the direction of the various societies, and in the advanced classes of high schools, calling attention to the needs, the opportunities for service, and in every way promoting a larger enlistment in dental studentship. As a further aid to such an end it is suggested that a sustentation fund be vested in our own or like organization, provided either by Government grant or by professional contribution, and subject to restricted loan on the part of students so requiring, and repayable in definitely specified manner.

2. Special courses.

It is altogether probable that even with the above mentioned efforts being made that there will be still a considerable number who will be deprived of the opportunity to secure dental services, at least of a kind that would be adequate. Any reasonable means that may be brought about to supply in any degree the deficiency is worthy of consideration.

Would it not be possible to arrange through a carefully selected committee of the C.D.A. a special limited course in connection with authorized schools, specially designed, it may be, for women students, and qualifying them to perform certain services, educative and preservative, particularly among the young, proper safeguards being instituted.

3. Reference Board.

The formation of a committee such as in mind might have value beyond what is herein specified, but in the matter of advice as to suitable locations for new practitioners it would be a useful contribution to the question that is now under consideration.

Aside from this direct service, there are possibilities of assistance in solving operative problems that may be presented, and recommending legislation tending to aid in increasing the value and magnitude of our work.

IMPERIAL RECIPROCITY.

It seems desirable that the principle of reciprocity be extended beyond the present bounds; in fact, the inclusion of other parts of the Empire

would, if adopted on the proper basis, result in a betterment for all concerned.

Recent developments have brought increased respect and confidence in respect to Canadian dentistry, and suggestions by this loyal Dominion, which has shown such professional advancement in the past, would merit sincere consideration on the part of others who should be interested.

THE PROGRAMME ARRANGED.

I commend to you the mental fare that has been prepared for our professional appetite by the local committee. The faithful attendance and attention to those who will contribute will be of distinct advantage, and I bespeak for those whom we shall be indebted to, prompt and courteous treatment. The tendency at some gatherings to attend tardily and irregularly when papers are being presented, or business being attended to, is lamentable, and I sincerely trust that here will be established a record for promptness and appreciation.

Aside from the helpful matter in the prepared programme we should recognize and duly value the good that comes from the intimate contact with those who are masters of their special subjects, and take this incidental opportunity to increase our efficiency to the end that our services will be the more valuable.

To the various exhibitors who go toward making the meetings the success that they are, I am sure we will all give their meed of praise.

In closing, I wish to express my thanks to the members of the executive for such efforts as they have made for the advancement of the gathering; to the central committee for so satisfactorily attending to the local arrangements, and to you all for your kindly hearing.

I trust and believe that you will be highly edified as the sessions proceed, and that you will proceed to your homes or other locations much the better for your stay.

THE DENTIST'S PART IN MEDICAL WORK

HAROLD J. LEONARD, B.A., D.D.S., Minneapolis, Minn.

Hospital Research Assistant in Elliot Memorial Hospital at the University of Minnesota, for the National Dental Association. Instructor in Dental Pathology and Pyorrhea at the College of Dentistry, University of Minnesota.

Read before the Dental Society of Western Canada, Regina, Sask., June, 1916.

I do not suppose there is a dentist in this assemblage who has not had in his practice cases of persons suffering from rheumatism or indigestion or some form of ill health which was greatly benefited or cured by cleaning up an unhealthy condition in the mouth. But it has been only within the last three years that a systematic study of the relationship between systemic disease and dental infection has been made, so as to know what diseases may be attributed to dental foci, and how they may be treated and prevented. Because there are many dentists who "pooh! pooh!" this subject, and call it "hot air," it seems only fair to show briefly why those who are investigating this field have become so thoroughly convinced that sepsis about the teeth is one of the greatest causes of chronic disease.

As accurate laboratory methods of study have been brought to bear on the diseases of the human body, it has become increasingly apparent that most of them are due to micro-organisms living as parasites on or in the body. Disease after disease has been worked out, until now the study of medicine is largely a study of bacteria and their pathological effects. Nobody any longer doubts the specific nature of tuberculosis, syphilis, diphtheria, gonorrhea, pus infections, and many others. These bacteria are known, and their methods of entering the body worked out. But not so well known, because the work is more recent, is the fact that both acute and chronic rheumatism, disease of the lining of the heart leading to valvular heart disease, inflammations in the heart muscle, myositis, chorea or St. Vitus' dance, ulcers of the stomach and duodenum, iritis, many cases of Bright's disease, probably herpes zoster or shingles, and many others hitherto obscure, are due to streptococci that normally live and develop in the mouth, and that the mode of entry to the blood stream, whence they are disseminated to these different organs and tissues in the body, is from small areas of inflammation in the mouth and throat, such as chronic dental abscesses, pyorrhea pockets and small tonsillar abscesses. I do not wish to review the vast amount of animal experimentation and laboratory work that has been done to prove these things, but I must mention the names of Poy-

ton and Payne¹, Beatty², Goadby³, Hartzell and Henrici⁴, Horder⁵, Rosenow⁶, and others, for their work in this connection.

The attention of these laboratory men was directed to the subject by certain clinical observations, such as the following:

1. That very many attacks of rheumatic fever follow closely on attacks of acute tonsilitis;
2. That very many attacks of chorea likewise follow closely on attacks of acute tonsilitis;
3. That in a large number of cases chorea and rheumatic fever occur coincidentally;
4. That acute cardiac dilatation, later followed by valvular disease of the heart, occurs in about a fourth of all such cases, with another fourth of the cases added at each succeeding attack. ^{7 and 8}

These observations pointed strongly to a relationship between these four diseases, with the probability that either bacteria or toxic products from the tonsillar condition, caused the rheumatic fever, or chorea followed by the heart disease. The laboratory men, as I have said, by their animal experimentations and by examinations of lesions at autopsy and operations, showed that it was the bacteria themselves, the streptococci, that invaded the joints, the meninges of the brain and cord, and the valves of the heart.

But in their experiments with injecting streptococci, they discovered that rabbits frequently showed other lesions than these. The kidneys frequently had miliary abscesses, often acute diffuse nephritis, later followed by chronic interstitial nephritis, known in human beings as chronic Bright's disease. Then ulcers in the stomach and duodenum frequently occurred, areas of inflammation in the heart muscle and in voluntary muscles, lesions in the posterior ganglia of the spinal cord, leading to herpes zoster, inflammations of the gall bladder, called cholecystitis, and even acute inflammations of the eye. These findings pointed the way for clinical men to determine if possible whether these diseases in human beings were not caused by streptococci floating in the blood stream having made their entry through some area of streptococcal infection like the tonsils.

That this is actually the case there is every evidence and reason to believe. In the first place, it has been found that practically everyone having one of these diseases has local foci. An examination by Grieves and Bear⁹, of Baltimore, in 1911, of four hundred cases of arthritis, demon-

1. Poynton and Payne: (Book) *Researches on Rheumatism*, 1914.

2. Beatty: *Journal of Pathology and Bacteriology*, 1904, Vol. IX., p. 272; 1910, Vol. XIV., p. 432; *Journal of Experimental Medicine*, 1907, Vol. IX., p. 186.

3. Goadby: *London Practitioner*, 1911; *Lancet* (London), 1911, March 11.

4. Hartzell and Henrici: *Journal of the American Medical Association*, 1915, Vol. LXIV., p. 1055.

5. Horder: *Quarterly Journal of Medicine*, 1908-9, Vol. II., p. 289.

6. Rosenow: *Journal of Infectious Diseases*, 1910, Vol. VII., p. 411; 1912, Vol. XI., p. 219; *Journal of the American Medical Association*, 1915, Vol. LXV., p. 1687.

7. Poynton and Payne: (Book) *Researches on Rheumatism*, 1914.

8. Osler: (Book) *Principles and Practice of Medicine*, 1912, chapter on Rheumatic Fever.

9. Grieves and Bear: *A Study of Four Hundred Cases of Septic Arthritis*, 1911.

strated local streptococcus foci in every one. An examination of every case of the above-named diseases in the University Hospital at the University of Minnesota, for the last ten months, demonstrated local foci in practically all. Many of these diseases may be caused by syphilitis or gonorrhea or tuberculosis, but these cases were ruled out of the count. A few, possibly ten per cent., are caused by local foci in other areas than tonsils or teeth, such as the sinuses accessory to the nose and ears, the appendix, the colon and rectum in chronic constipation, and the female genitalia. I think from the evidence gained at the University Hospital, that I am safe in saying that 90 per cent. of these streptococcal diseases make their entry through foci in tonsils and about teeth.

Another point of evidence is the fact that a large proportion of people having these local foci have these streptococcal diseases. It has been observed for years that where there is recurrent tonsilitis there is liable to be valvular heart disease, or a history of rheumatic fever¹⁰. That the same is true of local foci about the teeth has been demonstrated at the College of Dentistry of the University of Minnesota in the last two years, in the pyorrhea clinic¹¹.

Each student is required to make out a chart of each case in which a history of past and present diseases is obtained from the patient, urine analysis and blood pressure readings are made, and then, as the pyorrhea is treated and the mouth put in a healthy condition, the progress of systemic condition, if disease exists, is carefully noted. In last year's report, out of 123 pyorrhea cases in which data was obtained, only 41 had no systemic complaints. Of the remaining 82, 14 had rheumatism, 30 had indigestion or stomach trouble, 15 had recognized heart trouble, 5 had kidney trouble, 8 felt run down and below par, and 26 had other ailments, mostly of a nervous type. The work of this year, although the tabulation of the charts is not completed, goes to show exactly the same thing. Now, two hundred and fifty or more cases, all pointing the same direction, must mean something.

A third point in our chain of evidence is the fact that pathologic and bacteriologic examination of many hundred cases of blind dental abscess and tissues from pyorrheal conditions, demonstrates that streptococcus viridans is present, and that it alone is usually the pathologic micro-organism. Many others are found in the pus in the pockets, and in the root canals of the septic roots, but it is this organism, and this alone, which was found deep in the tissues, invading in all directions about the inflammatory area.^{12 and 13} Now, when it is known that the bacterium found at au-

10. Osler: (Book) Principles and Practice of Medicine, 1912, chapter on Acute Tonsilitis.

11. Leonard: Journal of the National Dental Association, 1915, Nov.

12. Hartzell and Henrici: Journal of the American Medical Association, 1915, Vol. LXIV., p. 1955

13. Dahlgren: Experimental Work at the College of Dentistry at the University of Minnesota, 1916, Jan. to June.

toppies in the lesions of the heart valves, joints, kidneys, muscles, and so on, is this same streptococcus viridans, the significance of these facts will be seen. The protective epithelium of the body when it is healthy is practically impervious to bacteria, but where ulcerations exist, whether about the teeth, or in the tonsils, or anywhere, then this protective covering is gone, bacteria penetrate, and may be taken up by the lymphatics, or blood stream.

The last bit of evidence for this belief in the focal origin of these diseases, and the one that to most people clinches it best, is that the treatment of the local foci in the majority of cases is promptly followed by an amelioration or cure of the inflammatory condition in these other organs and tissues. In the pyorrhea clinic referred to, it has been quite the rule for the symptoms of malaise and nervous fatigue, as well as various symptoms, especially of rheumatism, to disappear by the time the mouth was put in healthy condition, and so far as we have been able to learn, has not recurred unless the septic oral condition was allowed to recur. The same has been true to a more limited degree in the University Hospital. Here the cases are often advanced to a stage where destruction and deformities of the organs and tissues has occurred, so that merely curing the inflammation does not cure all the symptoms. However, many very remarkable cures and improvements have occurred coincident with proper dental or tonsillar treatment, after a failure of every other known means of treatment. These cases have been reported from time to time by Dr. Hartzell in his various articles¹⁴.

That the teeth are more to blame than the tonsils for these diseases seems logical, since the area for entry is usually larger. Accurate data as to just what part each takes has not yet been produced, but this is not necessary. It has been proven that very many, I should think easily more than half, are due solely to dental infections, and this is enough for our purposes. Miller¹⁵ and Hunter¹⁶ intimated that dental infections played a tremendous role in disease, and it has now been verified by these other men, starting with Goadby in 1911.

Having proven in every way to our satisfaction that many of these diseases were streptococcal, and came in 90 per cent. of cases from teeth and tonsils, it seemed proper to find out what proportion of all the medical cases admitted to the University Hospital might be placed in this class. A table of all the medical cases admitted from August 1, 1915, to June 1, 1916, to be published in the *Journal of the National Dental Association*¹⁷, shows the following: Of 331 cases admitted, after excluding all those in whom other infection, such as tuberculosis, syphilis or gonorrhea, could have been

14. Hartzell: *Journal Lancet*, 1913, Feb. 15; *Journal of the Infectious Diseases*, 1916, March; *Journal of the National Dental Association*, 1914, October; 1915, November; 1916, May.

15. Miller: *Dental Cosmos*, 1891, Sept.

16. Hunter: *Lancet* (London), 1909, Jan. 27; 1909, Feb. 3; 1909, Feb. 10; 1911, Jan. 14; *British Medical Journal*, 1907, Nov. 9, p. 1299; 1904, Nov. 19, p. 1358.

17. Leonard: *Report on the Hospital Work of the Minnesota Division of the Research Institute of the National Dental Association*, 1916, July.

the etiological factor, or in which local foci other than teeth and tonsils were known to exist, and leaving only those in whom there could be no reasonable doubt but that the disease was streptococcal, and blood-borne from the mouth, 80 had chronic valvular heart disease, 5 chronic endocarditis, 1 acute myocarditis, 8 chronic myocarditis, 3 pericarditis, 2 phlebitis, 3 thrombosis, 32 arthritis, 2 myositis, 1 acute nephritis, 20 chronic nephritis, 6 albuminuria, 4 chorea, 3 ulcer of the stomach, 1 herpes zoster. In many instances two or more of these diseases occurred in the same patient, so that the number of cases apparently due to teeth and tonsils is in all 134, or 40 per cent. of all the medical cases admitted. Nor is this all. There is good evidence to show that still other diseases will prove to be in this class, although the evidence as yet is not sufficient to definitely place them there. Furthermore, there is evidence to show that other infections, notably tuberculosis, are serious in many cases only because the patient is already in a condition of low resistance due to streptococcal infections from the teeth and tonsils¹⁸. Do these facts not justify Dr. Hartzell¹⁹ in his statement at Boston this spring, that dentists, in neglecting, and even causing these conditions, were shortening the average length of human life.

But, one might say, there are many cases of horribly septic mouths where the patients are apparently healthy. In answer to this, the fact might be cited that but comparatively few people come down with tuberculosis, yet tests and autopsies show that nearly everyone at some time or other has had a tuberculosis infection²⁰. There is a great difference in the resistance of different individuals, or the same individual at different stages of life, to the spread and dissemination of disease in the body. Many cases of streptococcal disease like arthritis have been temporarily or even apparently permanently cured by raising the body resistance in one way or another. But this does not militate against the truth of the foregoing statements as to the cause of these conditions. The subject of resistance to disease and the methods of raising and maintaining it, is of the greatest importance to all medical men, including dentists, and to the public in general, but I do not wish to bring it within the scope of this paper, except to say that oral hygiene is one of the greatest factors to that end.

In the Twin Cities, due to the constant hammering of Hartzell and others, these facts regarding the role of sepsis about the teeth as the developing ground for disseminated streptococcal infections, are gradually permeating the consciousness of the medical men, and they are making great efforts to have their patients' mouths put in a state of health. But they have the greatest difficulty in getting the co-operation of the dentists for this work. The dentists have ideas of their own regarding the conservation and

18. Daly; Dental Cosmos, 1915, Jan., p. 43; Knegg; International Medical Congress, held in Washington, D.C., 1912.

19. Hartzell; Lectures in Boston, 1916, March.

20. Osler; (Book) Principles and Practice of Medicine, 1912, chapter on Tuberculosis.

treatment of teeth, and they resent being told to remove all teeth that the radiograms show to have rarifications at the apex, and yet which are giving no other local symptoms of trouble. The average dentist is not sufficiently informed of the vital nature of the danger of leaving or temporizing with these apparently insignificant infections about the teeth, to be competent to judge what should be done for the patients' best welfare. Furthermore, he has not the necessary equipment, such as the X-ray, by which he can make a competent diagnosis of the presence or absence of infective foci about the teeth. Nor is he prepared in most cases to treat adequately the pyorrhea which comes to his office, so that frequently it is totally ignored. The truth is, that his whole life has been so devoted to conserving teeth, and building good masticating surfaces, that in order to do the radical work indicated in this field requires a revolution in his ideas and methods of work. It is heartbreaking for some of the older men who have spent their lives in conscientious work to try to adjust themselves to these revolutionary discoveries which in so many instances involve the destruction of expensive dentures, often urged on patients at considerable sacrifice.

The dental graduates from this time forth must be men grounded in the fundamentals of medicine, trained in the technic of taking and reading radiograms, competent to recognize and treat pyorrhea, and then, with the data together, to eliminate all foci of infection in the mouth and to build it up properly in appearance and function without paving the way for more abscesses and pyorrhea. This seems a big step for the average dentist, but if we would accept the responsibilities which our profession puts upon us, we can do no less. Not every dentist in practice at the present time can become competent to do this work, but every dentist can at least recognize the facts and act as his circumstances permit. There is room for men who will devote themselves exclusively to this matter of elimination of dental foci in co-operation with physicians, and to whom the dentist in general practice can refer his cases for advice.

The elimination of foci is not all the dentist can do in aiding the physician in the treatment of these streptococcal diseases. The manner in which it is done has a great deal to do with the systemic elimination of the infection. It has been found that to extract all the septic teeth in one sitting, for instance, although it may rid all the local foci, does not give the patient the benefit that is gained by the extraction of one or two teeth every four or five days. The idea is this. The stirring up of a large area of tissue invaded by streptococci by the extraction of a large number of septic teeth, or by the treatment of too many teeth in pyorrhea at one sitting, floods the body with streptococci which it is not prepared to resist, and the result is a set-back instead of a gain. Such a procedure has been known to lead to the death of patients. On the other hand, the short treatment at long intervals does not throw a sufficiently large number of streptococci into

the blood stream to set the patient back, but Hartzell believes it is just enough to stimulate an anti-body formation. In this way the treatment acts as a natural vaccine, and clinical results show it is often remarkably efficacious in curing some of the otherwise stubborn cases of chronic arthritis, and other streptococcal disease.

There is a need for dentists in the hospitals to treat this 40 per cent. or more of medical cases having disease due to dental sepsis. The time is coming very quickly when no hospital can be considered at all well equipped unless it has a dental staff large enough to treat not only these special medical cases, but also all the other cases, as a prophylactic measure. No one can say at this time how many surgical cases are delayed in healing, or fail altogether, due to the interference of a blood-borne streptococcal infection, or how many obstetrical cases dies from the same cause.

This matter of prophylaxis brings me to the greatest work for dentistry of the future and to-day. Our work should not stop with the treatment of persons who have either neglected themselves, or had our mistakes perpetrated on them. It is for the dental profession to get ahead of the situation, and prevent all this sorrow and suffering at the start. The slogan "clean teeth do not decay," and, I might add, "do not have pyorrhea," is the solution of our problem. Caries and gingivitis should not be allowed to get a start. Not only is this desirable, but possible. Our patients must be taught how to keep their teeth clean, and to keep their children's teeth clean.

But right here I would like to emphasize what Dr. Orton brought out yesterday in his paper. Our part in prophylaxis is more than cleaning the teeth and teaching the patient to use a brush and floss. It is for us to place the mouth in such condition, and maintain it, that cleansing is automatic. It is out of the question to keep teeth clean having fillings or crowns overhanging into the gum, or to keep an interproximal contact an eighth of an inch wide free from danger of decay. The anatomy of teeth must be known, as well as the reasons for the natural normal shapes, and restorations made complying with the demands of prophylaxis. Orthodontia is prophylaxis. Extension for prevention is prophylaxis, but, as Dr. Orton says, the prophylactic demands in crown and bridge work are not fulfilled, nor even recognized. The proper relation of teeth in occlusion and articulation, in the practices of most dentists, is totally ignored. Crowns and fillings are made with cusps altogether wrong from a mechanical standpoint, that could not be better designed to cause destruction of the teeth. No tooth can long stand the stress of the entire force of articulation without inflammatory and degenerative changes occurring in the peridental membrane. Thousands of teeth are needlessly lost from undue stresses that need never have existed had the dentist understood the fundamentals of the anatomy and articulation of the teeth.

Another manner in which the dentist falls short of prophylaxis is in root canal work. In the first place, teeth are needlessly devitalized for the convenience of the dentist, when, as Dr. Orton has shown²¹, the most of the posterior teeth are mechanically impossible to either clean out or fill. Then, to make matters worse, infection is invariably introduced. Broaches taken from an open box, wound with cotton from an open retainer, by fingers scarcely dry from saliva, can scarcely be free of infection, even if saliva is kept from the cavity and canals. That not more than 68 per cent.²² of such filled or partly filled canals show rarifications of bone at the apex, or absorption of the root end, in the radiograms, and give positive bacterial cultures, is a wonderful commentary on the resistance of the body. But that 68 per cent. do show these septic conditions is certainly not to the credit of the dentist.

While these things are true in the dentists' own work, there is much that should be taught to the patients. The archaic meaning of the word "Doctor" as "Teacher" should be revised. But before we can teach with force enough to overcome the inertia of the average human being in the care of his body, we must have the facts ourselves. When the danger and results of oral accumulations is a living reality to us, then we can talk with some effect. I am not going to take time in this paper to show just how the patient should be taught, although I believe only a few dentists know, for I shall go into this at some length in a talk to the public this evening.

But there is more that can be done by dentists than merely instructing their own patients. A campaign must be waged by the society, as well as by individuals.

In the first place, the medical profession should be educated to the importance of dental foci as a factor in disease. This should be done by each individual dentist making it his business to inform his medical friends of the facts, as they are disclosed in the journals. Then this society might exchange lecturers with the medical societies, so as to give them our information as well as to get theirs.

Pressure should be brought to bear by the individuals, and as a society, to have dentists placed in the hospitals. Hospital superintendents are working for the good of their institutions, and when they can be shown the benefits to be derived, in cured cases, and in repute which such work gives, they are not slow in adopting this measure.

Boards of health should be informed by the dental society of the importance of this matter, and should be induced to co-operate for the propaganda of oral hygiene to the public. Oral hygiene must sooner or later become a public matter. Such a toll of health and energy exacted from the

21. Orton; *Dominion Dental Journal*, 1916.

22. Ulrich; *Journal of the American Medical Association*, 1915, Vol. LXV., No. 19, p. 1619.

community by preventable oral sepsis will not be tolerated forever. When society is convinced that it is an economic gain to have dental examination and free clinics for all children in school, and even for adults who are unable to pay for work in private offices, then public free clinics will become a fact. It is time that the profession of dentistry got behind these things. We know the facts as no one else does, and if we do not preach them, and work for proper remedies, the responsibility for further suffering and loss of life from these causes must fall on us. Are we ready to assume the responsibilities of our profession? Or do we wish to go on as we have, each making his own little private pile out of the misfortunes of the public, with no thought of our public duty? An organization like this, with a membership of this size, working enthusiastically and earnestly in unison, could accomplish a wonderful result for the benefit in health to the community.

Let me cite what has been done in Cleveland²³. In 1911 a group of twenty-seven pupils who were retarded and backward in their studies and irregular in their attendance was chosen from the Marion School to test as to the gain that might be made from cleaning up oral sepsis. A carefully-prepared mental test was made and applied to each pupil six times during the year of the test. A gain attributable to oral hygiene alone of about 50 per cent. was made. While this series is too small to be in any sense conclusive evidence that any such large gain might be made on the average with retarded pupils in all cases, still, coupled with the experience of men doing medical work with children elsewhere, it leaves no room for doubt that a very large share in the retardation and repeating of grades must be attributed to bad teeth. In children teeth may cause inattention and irregular attendance by aching, or they may be sore and cause bolting of the food, or, as in adults, they may be infected, causing metastatic infections throughout the body, or they may cause nerve irritations, resulting in reflex nervous conditions in other parts. In reading the facts and figures, one cannot help feeling a wave of pity for these children, thousands of them, everywhere, who do not have a chance, because of preventable troubles like tonsils, adenoids, and sore and septic teeth, to take advantage or profit by the wonderful educational systems of the countries. But what shall be said of the short-sighted policy of those countries which, as in the United States, pay out twenty-seven million dollars²⁴ yearly for pupils having to repeat grades, and yet cannot be induced to make the comparatively small expense necessary to save most of this money. And this twenty-seven million dollars is not all. When is added to that the public and private expense for incompetency and poor health in adult life resulting from this neglect in childhood, the expense for fighting those cases of tuberculosis which result purely from dental and tonsil trouble in childhood, and the loss in efficiency of the manhood and womanhood of the nations resulting from a stunted child-

23. Wallin: *Dental Cosmos*, 1912, Apr., p. 404; 1912, May, p. 545.

24. Ayres: *Dental Cosmos*, 1912, May, p. 559.

hood, then we get some idea of the magnitude of this drain on the public. But the public is not altogether to blame, for these facts are not yet presented sufficiently to have a part in the public consciousness. It is for the men who know the facts to do the informing.

As to just what method to use in getting at this problem, it is for the local committee to work out. Rochester, Boston and Philadelphia have immense charities sufficient to handle the children of those cities. But this should not be a charity matter. It is for the public. Medical and dental examination and treatment should be compulsory, just as the education itself is. I should be of the opinion that men should be hired on a full-time basis to do the educating and actual work. Whatever method suits the conditions best and is effective is good. We must not be prevented from doing our duty by the fear that activities in the public behalf will be mistaken for advertising methods. Even if such should be the case, it cannot last. Whole-hearted, enthusiastic service for the public in such a cause will not long be discredited by those whose good opinion we would court. How much worse to have them feel that we kept silent, when our voice aloud in the land would have saved hundreds, nay, thousands of children, and possibly adults, from becoming an extra burden on the State, their friends and themselves. What is needed is public education, and we must be the educators. We must show the public the economic loss from oral sepsis, and the economic gain from its prevention. We must show how this loss can be prevented, and what steps must be taken to get the machinery working. It is talking, individual and public, a flood of enlightenment, with the force of an enthusiastic and compact body of men to push it through, that alone will accomplish the desired results.

The Anglo-Saxon race is slow to believe that physical health is anything but a matter of individual responsibility. There is something distasteful in having governmental supervision of our manner of living. But in spite of this, our Governments have taken over the educational systems, they are gradually assuming control of our moral well being and lastly if the race is to survive in the competition they must take charge of the physical well being of the individuals. To this end boards of health and sanitation are created as well as free public medical clinics and hospitals. Now it is for us to push the good work along another step in conserving and strengthening our race. Are we girt for the fray? Have we the courage of our convictions?

THE PRESIDENT: I am sure, ladies and gentlemen, that I voice your opinion as I do my own when I say this paper this morning has been in many respects an eye opener to us. Many of us have felt for a long time that Dentistry was becoming more and more a question of general medicine. It was on my mind in my humble efforts towards a President's address to insert

something of that nature. For fear of making it too long and therefore irksome I left it out. I am very glad that Dr. Leonard has put it before you in a way I could not hope to do because I thoroughly agree with Dr. Leonard as I am sure you must, after the comprehensive paper he has given us. We do not know half enough about medicine to practice dentistry in this year 1916. I will also go a step further in my contention that there are very few medical men, if there are any, who know enough about dentistry to practice general medicine properly. I think I can say that without fear of contradiction. I feel very strongly that the time is coming when medical men will know more about dentistry and dentists will know more about general medicine so that each can practice for the benefit and well being of the public at large.

Dr. Lane, of Moose Jaw, will now open the discussion on Dr. Leonard's paper.

DISCUSSION.

DR. LANE: Mr. President, Ladies and Gentlemen:—I wish first to congratulate Dr. Leonard on his excellent paper. All the papers have been good so far, but I believe this is one of the best, and an eye opener to a great many of us. I am sure anyone who has been reading recent dental literature must be very forcibly impressed with the findings of these men who are devoting a large share of their time to research work along these lines. It is only recently that the average physician has commenced to sit up and take notice of these filthy conditions we find in the mouth and their relation to systemic diseases. The condition of a patient's mouth was hardly ever taken into consideration in diagnosing and prescribing.

We all know a large percentage of disease germs enter the body through the nose or mouth. If the latter is in a clean, healthy condition there is far less chance for the germs to propagate and enter the blood stream, and thus become a source of systemic infection. This is proven by the case of St. Vincent's Orphanage in Boston. They had over one hundred cases of infectious diseases annually in their institution. After dentists and medical men had cleaned up the filthy oral conditions these diseases were practically stamped out. When we know that these filthy oral conditions are the cause of systemic infections of various kinds, should we not warn the public of their danger and educate them along the lines of prophylaxis? I believe the place to start is in our schools.

My two and a half years' experience as Dental Inspector of Schools, in Moose Jaw, was a revelation to me. The neglected, filthy condition of children's mouths is something appalling. We all know children who have defective teeth, adenoids and enlarged tonsils, are backward. When I saw a child, a mouth breather, with tonsils as big as a good sized walnut, half the teeth badly decayed (I saw many such cases) I would say to the teacher, "How is this child getting along with the school work?" The answer was

invariably "Very backward." The next time I would come around and find the condition corrected. I would say to the teacher, "How is the child this time?" The answer would be, "Getting along fine, you would not know it was the same child."

These conditions must be corrected if the health of our children is to be conserved and their efficiency kept to the highest point. What are we doing to bring this serious problem to the attention of our school authorities, in such a manner that they will take some action to clean up existing conditions as far as possible, and have the children taught how to keep their teeth clean and thus keep them from decaying? Get after the School Boards and tell them it is a saving for the tax payers to have these physical defects remedied, for children whose parents are unable to pay for same. The following is a report and recommendation I sent in to our School Board during my inspectorate:

"During the school year 1914-15 I handed a list of nearly 200 names to you of pupils who were suffering from adenoids and enlarged tonsils. I submit a further list of 29 names of pupils from the King Edward School, who are suffering from these physical defects. This is out of 198 examined. As you well know, such pupils are dull and backward, the larger percentage of them fail in their examinations and therefore have to repeat their grade. For every child in the schools last year it cost the taxpayers of our city about \$63.00. Supposing one-half or 100 of the above list of pupils failed to pass their examinations because of these physical defects, it will cost the taxpayers about \$6,300 (depending on the rate this year) to put these failures through their grade again this year. There is no question but that I am underestimating the number of failures caused each year by these neglected physical defects. It would be an economic proposition for the taxpayers if every one of these cases were treated, as it would not cost the City as much as it is costing them to put the pupils through the same grade twice. At least some definite action should be taken immediately so that the pupils, whose parents are unable financially to have them treated, may be taken care of.

"Nothing is more valuable to the state than the lives of those who compose it. The child of to-day is the citizen of to-morrow, and any money expended along these lines now increases the child's efficiency, both mentally and physically, and thus develops a more valuable citizen of the state."

I am sorry to say nothing definite was done by them, except that they talked of appointing someone to take care of the cases. This was as far as they got.

I believe the dental and medical professions should get together on this problem and work hand in hand to better the condition of our fellow men.

Now, Dr. Leonard suggested that we get behind this thing as an organization and educate the people on prophylaxis.

We have the means at hand to carry on this educational campaign as this letter I am going to read will show. It is from Dr. George W. Grieve, Secretary of the Educational Committee of the Canadian Oral Prophylactic Association.

(Dr Lane then read this letter in which Dr. Grieve stated that he hoped the dentists would appoint a strong Educational Committee in the Province as his Association were willing to aid them in every possible way by furnishing moving picture film "Toothache," skeleton lectures and slides to carry on the educational work. He also stated that the Canadian Oral Prophylactic Association were anxious to enroll as associate members, at a fee of \$1.00, not annually but for permanent membership, in order that they may help along the glorious cause for which they are working, viz., mouth health. With healthy mouths there will be more generally healthy bodies. The funds to carry on this campaign are derived from the small profits made through the sale of Hutax Brushes, tooth powder and paste. It is the aim of the Association to have committees established and kept in working order all over the Dominion, these committees doing all in their power to enlighten the public in the case of their mouths particularly, and their bodies generally.)

The charts used in my clinic yesterday afternoon were furnished by this Association and I think are admirably suited to use in giving talks to school children, mothers' clubs, etc.

Yesterday we left it in the hands of our Provincial Dental Council to appoint an Educational Committee. I know they will appoint a good strong committee and with the aid they can obtain from the Canadian Oral Prophylactic Association a great deal of good can be accomplished.

I am sure you will, each and everyone, co-operate with them and do all you can to help carry on this educational campaign for clean mouths and better health generally.

No questions were asked regarding Dr. Leonard's paper, and the President asked Dr. Leonard if he had anything further he would like to say.

DR. LEONARD: There really is not much occasion for a reply as the paper has not provoked as much discussion as I had hoped it would. I hoped that someone would get up and say he did not believe some part of it and in that way bring out some interesting points.

There is not much I can say in regard to School Oral Hygiene as some of you, especially men like Dr. Lane, who have been engaged in the work, are much more familiar with the practical details and talking points than I am. Dr. Lane has made a careful study of it, but I do not feel that this work should be left to one man. Every dentist ought to make it a part of his work to get behind the movement and "boost" for it. It is not a one man job. We need the force and enthusiasm of the whole body of the societies. These men who are doing this work need to feel that all the dentists are

behind them. The public is not going to realize the need or take any particular interest until the subject is taken up in a larger way than by one man or one committee.

I understand that Dr. Black, whom you all know as being prominently connected with educational work in this district, came before the Saskatchewan Society yesterday and pleaded that the Society conduct a campaign of public education on School Oral Hygiene. And yet we hear dentists say, "We cannot do these things until the public is educated." I would like to ask who is going to educate the public unless we do? And whose fault is it that the public is not being educated when public educators and others, not dentists, are asking for this education. The time is ripe, everything awaits us, now is the time to work.

LIEUT. ALLISON: I would like to ask Dr. Leonard one question. How do you connect the diagnosis of the disease phlebitis as being caused by conditions in the mouth?

DR. McDONALD: One point is not very clear to me. It is whether the micro-organisms precede the deposit of calculus on the teeth or whether they come after.

DR. LEONARD: In reply to Dr. Allison's question; our cases in the University Hospital are thoroughly examined for causes of the various lesions before we assume the probability of dental origin. The disease phlebitis, according to Blummer in the chapter on thrombosis in Osler's System of Medicine, occurs in a certain percentage of cases of typhoid fever, influenza and rheumatic fever, evidently by infection of the intima of the vein, accompanied by thrombosis. In these two cases of which I spoke, one has a history of lumbago which I believe is a streptococcal myositis, and had no cause apparent, either mechanical or bacterial, except slight tonsil inflammation and a septic mouth. He had shown no improvement for weeks up to the time the mouth was treated, but promptly started to improve once the dental treatment was well under way, and was up and about in comfort by the time the last treatment was given.

The other case was associated with many other symptoms of streptococcal infection, such as recurrent arthritis, chronic valvular cardiac disease, and a hemiplegia, due no doubt to an embolus from the mitral vegetations. The phlebitis was in the left arm, and in this case no mechanical or bacterial cause other than streptococcus infection coming originally from the tonsils and teeth could be made out. The other symptoms of this patient were apparently streptococcal, and without understanding of the subject there seemed no reason for not including the phlebitis as such a symptom.

Does this answer your question, Dr. Allison?

DR. ALLISON: I had in mind, although it is not very clear, that phlebitis was caused by some restriction of the blood vessels, and I thought it

was pretty far away from the seat of trouble. I was just asking for information, not for argument.

DR. LEONARD: The fact that the disease is far away from the seat of trouble, when you consider that it is carried by the blood stream, is not surprising. The infection gets into the blood stream and is liable to land anywhere in the body where conditions are suitable for streptococcal lodgment and growth.

Regarding Dr. McDonald's question, I have every reason to believe that the subgingival calculus, which occurs under the gum margin around upper teeth in those cases where the gum is usually thick and turgid, and pockets may have started, is secondary to the bacterial soft deposits on the surface of the crowns of the teeth. The saliva being a good culture medium, and other conditions being favorable, bacteria accumulate in plaques and masses on the tooth surface. The gum which approximates these bacterial masses becomes inflamed, and serum and blood exude, from which this hard calculus deposit is formed on the surface of the tooth under the gum edge.

USE OF ELEVATORS IN EXODONTIA

E. W. PAUL, D.D.S., Toronto, Ont.,

Read before Ontario Dental Society, Toronto, May, 1916.

Mr. Chairman, Ladies and Gentlemen,—My paper, or what may more properly be called my talk, possesses at least one virtue, and that is, that it is very short. No doubt it is unnecessary to explain what is meant by elevators, although I have met some dentists who did not know what I meant by that term. All of you have used an elevator at some time, even if you did not wish to call it by that name, in the form of an excavator or a scaler, or some similar instrument. An elevator consists of a handle and a blade made up in a great many different forms, many of which are of very little use, except for isolated cases. An elevator acts on the principle of a lever or a wedge or pryer, with which you pry the roots or teeth out of their sockets, usually by using the adjoining tooth as a fulcrum. In the absence of an adjoining tooth, you have to use your finger, or else the margin of the alveolar process surrounding the root.

ADVANTAGES OF ELEVATORS.

In the case of badly broken-down teeth, roots that are badly broken down below the gum, and in the case of hidden roots, if a forceps were used it would mean considerable fracture of the alveolar process, and more or less laceration of the gum. By the skilful use of an elevator these can be avoided. Of those, I am free to admit there are a number I could not possibly extract without the use of elevators. In the case of impacted teeth, suppressed teeth, or irregular teeth, it is sometimes impossible to apply a forceps or apply force in the proper direction in order to remove the tooth from

the socket. In such a case an elevator can be used to advantage. Another advantage is that patients dread the use of an elevator much less than the use of a forceps. I might say that elevators seem to be more indicated in the lower jaw or mandible, especially in the case of badly broken-down first molars of children, or in impacted lower wisdom teeth, or in the case of a badly broken-down bicuspid. I seldom—possibly not so seldom, but in comparison with the lower jaw, I seldom—use the elevator in the upper jaw.

There are many different forms of elevators. Some are too large and too long; you are too far away from your work. Some have handles with sharp or serrated edges, which either hurt your hand when grasping tightly, or injure the corner of your patient's mouth when using. The points of the beaks of some elevators are too dull and too thick, and then others, having wooden handles, do not admit of sterilizing by boiling.

The essentials of an ideal elevator are:

1. It should be made of metal, so that it can be sterilized by boiling. It is a great satisfaction, after using an instrument, to be able to throw it in the sterilizer and have it boiled.
2. The point or edge of the beak should be sharp and thin—practically a knife edge—so that it will cut through the gum, and, if necessary, into the alveolar process.
3. The point of the beak should be in line with the handle.
4. The form of the handle should be such that it will not turn in your hand when considerable force is applied.

At the present time, no elevators that I know of fulfil all these requirements. Recently I designed a pair of elevators, which were made by a tool manufacturer, and although very crude in their make-up, have served to demonstrate that the idea is practical, especially if the elevators were made by a competent instrument-maker, with some improvements he might suggest.

METHOD OF USING ELEVATORS

When operating on the left side of the mouth, especially in the mandible, the operator stands well in front of the patient. With the first finger, the cheek is held out of the way, and with the second finger, the tongue is kept cut of the way, and with the thumb, you support the lower jaw. You decide the direction you wish to apply your force, and the tooth you wish to use as a fulcrum, and use either the right or left hand elevator, as indicated. In case it is the roots of the lower first molar which have to be extracted, and the second molar is to be used as the fulcrum, you use the right-hand elevator. By inserting the thin edge of the beak between the gum and the root in the V-shaped space, you press your elevator down until you have reached fairly sound tooth tissue, and then apply your force by prying upwards and forwards, and the root will usually be removed. If you find the

root is breaking off, then insert your elevator a little deeper, which will mean that you have to cut into the process, and that is where the advantage of the sharp and thin elevator is seen. After you have extracted the distal root, you can use the left elevator, inserting it between the second bicuspid and the mesial root, and applying your force upwards and backwards. Another method is, where one root is extracted, place the point of the elevator down the socket, cut through the thin plate of bone which separates the roots, securing a hold in the side of the remaining root, and lift it out of its socket. Where there is no adjoining tooth to use as a fulcrum, as I said before, you must use your finger, from which you can apply considerable force, or insert the beak of your elevator between the gum and the root until you reach the process, and by prying against the edge of the process, the root can usually be removed.

In extracting lower third molars, I usually use a straight wedge-shaped elevator, placing it between the second molar and the wisdom tooth, and by simply turning and prying distally, the tooth is lifted out of its socket. All the time we protect the throat and support the fulcrum tooth with the point of the second finger.

When operating on the right-hand side of the patient, you stand behind and well above your patient. With the first finger you keep the cheek out of the way, and with the thumb you hold the tongue out of the way, and with the rest of the hand you support the mandible, protecting the throat and steadying the fulcrum tooth with the thumb. Do not be afraid to take a firm hold of your elevator, and get close to your field of operation.

In extracting upper roots or lower anterior roots, the beak of the elevator is placed between the gum and the root on either the labial or the lingual surface, and by supporting your thumb on the adjacent gum or teeth, the roots are lifted out without, in most cases, the laceration of any gum tissue or fracture of the process.

In the case of fractured upper third molars, or where they have been attempted with forceps, and will no longer take any grip of the root, often by inserting an elevator between the second molar and the wisdom tooth and applying your force distally, the root will at least be loosened, and sometimes removed.

There are a few precautions to be observed in the use of elevators. Avoid letting your instrument slip, as these elevators are more or less sharp, and would injure or lacerate the tissues considerably. Then avoid using a porcelain crown, or a great many gold crowns often having a weak foundation, teeth whose crowns are largely fillings, or loose teeth, as fulcrums against which to apply your force. In cases where this seems necessary, insert the point of your elevator as deeply down on the root as possible, so as to bring the strain below the crown or weakened portion of the tooth.

Selections

PYORRHEA OR EMETINE

By G. C. BOWLES, D.D.S., Detroit.

A great deal is being said and written these days about Pyorrhea and the short cut to its cure by the miraculous action of emetine on the *Endomoeba Bucallis*, its assumed cause.

Articles in the Sunday papers, published interviews with M.D.'s, and skilfully phrased advertisements in the daily press, are acquainting the public with the alarming prevalence and the dread character of this insidious disease and creating a demand for cures by this sure and easy route. Said the representative of one of our largest drug supply houses: "Many of the dentists of this community who never attempted to treat Pyorrhea are now curing it by means of emetine." Many physicians are curing it by the same means also. What is going to be the result of the "cures"? A big crop of disappointed victims, certainly, and an increased conviction on the part of many practitioners that pyorrhea is incurable, for it goes without saying, that the dentist who could not treat pyorrhea successfully without emetine will not treat it successfully with it. Emetine hydrochloride may be a useful adjunct to thorough instrumentation and strict oral hygiene in the treatment of pyorrhea, but it cannot of itself effect a cure.

The only short cut to the cure of pyorrhea is to prevent it. And while at present but comparatively few have the skill and equipment to successfully treat pyorrhea in its advanced stages, all may detect its first symptoms and by removing the cause, prevent it.

Its cause is whatever produces gingival irritation, for pyorrhea begins as gingivitis. Among the causes are: malocclusion, causing unnatural stress, favoring the impaction of fibrous food particles and increasing the difficulty of keeping the teeth clean. Parents should be impressed with this phase of malocclusion.

Abnormal interproximal spaces due to faulty contact, lack of marginal ridge, tipping and movement of the teeth due to extractions, etc., overhanging margins of crowns and fillings, tartar deposits, cervical cavities, an etched or roughened condition of the tooth surfaces making cleanliness impossible, and a general lack of intelligent oral care. These are conditions readily detected. Their significance should be impressed upon the patient, and corrected as far as possible. Contrary to the usual understanding, the correction of these conditions is embraced in the term prophylaxis. With many "cleaning the teeth" and "prophylaxis" are regarded as synonymous, and of aesthetic value only. They practice it only when requested to do so by the patient, or when the deposits already have menaced the health of the teeth. They do not like the work and get a small fee for it, which

usually is more than it is worth. As this kind of prophylaxis prevents neither pyorrhea nor caries, it is not prophylaxis. Prophylaxis aims not only to remove all deposits, both hard and soft, from the teeth, but to make the teeth so smooth and highly polished as to render it possible to keep them free from such deposits.

The ideal time to begin prophylaxis is with the children, before the interproximal spaces have been obliterated with overhanging fillings, and before the enamel has become so deeply etched at the gum line as to invite gingivitis and make cervical cavities but a question of time. And to start at this opportune period with the average child we must begin early, for in many cases the incisors are etched so deeply that they can never be really cleaned by the tooth brush before they have been erupted a year. Clean the teeth of your next young patient in your ordinary way. Then with a pellet of cotton dipped in Skinner's disclosing fluid (iodine 50 grains, zinc iodide and potassium iodide each 15 grains, water and glycerine each 4 drams, an indispensable preparation), paint the teeth and note the etched surfaces and the undisturbed mucous plaques. Carefully polish the pits with fine carborundum and Arkansas points and give the teeth a high polish with the orange wood stick and tin oxide (Merck's), and then instruct the patient in the proper use of the tooth brush, floss tape and tooth powder. In this connection read what Dr. Bunting has to say about tooth powders and pastes in the August number of the "Journal" of the National Dental Association, page 258. Note particularly the character of the grits in the various preparations in common use and the difference in the scouring qualities of the pastes, and of powders containing a high percentage of soap and powders with little or no soap. This is the first contribution, to my knowledge, that has ever appeared on this very important subject. It enables us with some degree of intelligence to prescribe a preparation to suit the individual need. Such coarse products as Pyorrhocide, Lyons, Sozodent, and Sanitol may be permissible in mouths where the thick ropy saliva acts as a lubricant and considerable friction is required to reach and clean the tooth surfaces, but to prescribe such preparations for mouths having a thin and watery saliva may have highly disastrous consequences, especially if the gritty powder is associated with the almost universal method of cross brushing. Opinion differs as to the best method of brushing. Some hold that the circular motion, such as is employed by the woman with the scrub brush, is the most effective. I prefer placing the brush high up (on the upper jaw the reverse side of the lower) on the gums and rolling the bristles down over the gums and surfaces of the teeth labially and lingually alike, massaging the gums, stimulating circulation and brushing the debris out from between the teeth at the same time. This should be done for five minutes at a time night and morning, to be followed by the floss tape and a vigorous rinsing with normal salt solution.

When the little patient presents next month for her second prophylaxis,

the disclosing fluid reveals to you and to her how effectively she has followed your instructions. She may be very proud of her results, and before the application of the disclosing fluid the teeth may look quite clean, but the staining may surprise her and you. Perhaps the discolored areas have not been reached by the brush or dental tape, in which case further instruction is required; perhaps the discoloration is due to roughened areas, in which event more careful polishing is needed. How often should prophylaxis be given? How often should the snow be shoveled off the sidewalk in the winter? Often enough with the co-operation of the patient to keep the teeth cleaned and polished.

Prophylaxis, with the instructed co-operation of the patient, may be expected to very greatly lessen caries and to wholly prevent pyorrhea alveolaris, a consummation abundantly worth the effort. Prophylaxis without such co-operation will prevent nothing—is not prophylaxis.

Unfortunately we cannot confine our efforts to the prevention of initial injury beginning with childhood. But every day, in general practice, there presents cases of pyorrhea in its early stages which may be successfully treated by any careful dentist, who has the eyes to see the actual condition and the willingness to treat them with the same intelligence and thoroughness he employs in his other operations. No examination of the teeth is complete which does not include a search for pyorrhea or the causes which lead up to it. No case is completed where sources of gingival irritation and infection remain, or where pyorrhea is left uncured.

Where there is continued gingivitis there follows destruction of the gingival margins of the process, with the exposure and death of the periodontal membrane. From the sloughing away of the fibrous attachment of the periodontal membrane, minute pits are left in the surface of the cementum which form foci of infection. These must be carefully planed out, all necrotic tissues removed, as well as all serumal deposits, and the surface polished, before the tissues can return to health. In planing and polishing the cementum great care should be exercised not to cut through the outer compact layer and expose the lacunae. Once this outer layer is cut through a smooth polished surface is impossible and reinfection is inevitable. The structure of the cementum should never be lost sight of throughout all our prophylactic operations.

Recognizing the significance of gingivitis it becomes the duty of every dentist to seek and remove its cause. If the destruction of the tissue is not too great, the removal of the irritants and the polishing of the infected surfaces is not particularly difficult. If it is thoroughly done and the oral hygiene rigorously maintained, the tissues promptly return to health without the use of any drugs whatever, save the use of iodine or the disclosing fluid to sterilize the field of operation during the progress of the work.

It is equally the duty of every dentist to refer such cases of pyorrhea as do not respond to his treatment, or such cases as he does not care to

treat at all, to the specialist, who can and will give the case the treatment it requires.

No dentist abreast with current dental literature and knowing the menace to life and health that dental abscesses and pyorrheal infections are shown to be, will dare permit the continuance of these conditions in the mouths of his patients.—“Michigan Dental Journal.”

ARTERIOSCLEROSIS AS A CELLULAR DISEASE, TOGETHER WITH A STUDY OF ITS HYGIENIC TREATMENT

By LOUIS FAUGERES BISHOP, A.M., M.D., New York.

*Clinical Professor of Heart and Circulatory Diseases, Fordham University
School of Medicine; Physician, Lincoln Hospital.*

The subject of this address is arteriosclerosis. By arteriosclerosis I mean the general disease with which every physician is familiar, but which is very badly named when it is called arteriosclerosis. Like many other conditions it has received its name from a localized condition, just as enteric fever is a synonym for a certain disease that consists of a bacterial invasion of the body by certain specific germs that get into the blood stream, pervade all the organs, and run through a certain cycle of events leading normally to the production of the necessary antitoxins and the recovery of the patient. Enteric fever is a very inadequate name, and was given to the disease because in most cases—if not all—there was an ulceration of the intestinal tract which was seized upon as the supposed seat of the disease, and gave the name to the condition.

In the same way arteriosclerosis, a general disease, from which no part of the body is exempt, involving in a degree all the organs of the body, has received its name because in its well developed stage the arteries are found—when they are observed—to be thickened and conspicuous. Like typhoid fever, arteriosclerosis is a general disease. It is not due to a particular micro-organism. It is due to what is known in medicine as a “disturbance of metabolism.” The term, disturbance of metabolism, means very little unless we define it.

In this instance, we define it as the processes of the ultimate products of digestion to the nourishment and maintenance of the cells of the body. That is metabolism.

A disturbance of metabolism is a disturbance of the relation of the ultimate products of digestion to the nourishment and maintenance of the life of the cell.

So the disease, arteriosclerosis, is a disturbance of the relation of certain material which comes from the food for the maintenance, nourishment, life, and health of the cells of the body. As it involves all cells of

the body, it is liable to be more pronounced first in one place and then in another. You all know what a person with advanced arteriosclerosis looks like.

Any one with this condition might also be defined as suffering from cardiovascular renal disease. You know that when such a person comes under observation in a well developed stage of the disease, you are puzzled to know whether you are dealing with a heart condition, whether you are dealing with a kidney condition, or whether you are dealing purely with a blood vessel condition. You know that the functions of the intestines, liver and kidneys are involved, and you know that whatever conclusion you reach, someone else will say to the contrary: If you say the person suffers from heart disease, somebody else will say he is suffering from kidney disease; if you say kidney, somebody else will say arterial disease. So it is not possible in these conditions to say just what the nature of the disease is, provided that you insist upon the organic nature of the disease.

This problem is so interesting that it has occupied much of my attention, and I have reached the conclusion that the condition known as arteriosclerosis is really a disease of the cells of the body, and that the involvement of particular organs is a matter of sequence and follows on the general condition.

The cell must digest its nutriment material or else it cannot be nourished, just as the animal must digest its food before it can become available for the nourishment of the cells. Thus we have two digestions: One which is very conspicuous, the digestion of food by the gastrointestinal tract, which is interesting to everybody, and is a matter of consciousness. It is only relatively important compared with the other digestion. The other digestion consists of the digestion of food by the individual cell, and that digestion is of vast importance and extremely complicated. The gastrointestinal digestion consists simply in the preparation of food for absorption—of the breaking down of food into the simpler forms so that it may be easily absorbed into the blood streams. The food is not much changed by gastrointestinal digestion. It is rather torn apart into its fundamental divisions. The animal food is broken up into its aminoacids and so forth, but the aminoacids are not broken up and their nature is not changed by the gastrointestinal digestion.

Metabolism is entirely different. In the process of metabolism, the protein molecule is absolutely broken up and its identity is completely lost. That is a very complicated biochemical process, and is carried on by a great many organs. It is carried on by the liver, the spleen, the thyroid gland, the suprarenal glands, and the kidneys, which have all some metabolic function. The marrow of the bones and the ductless glands have to do with the process of metabolism. Many chemical processes are carried on in the muscles.

As I say, this digestion is vastly more complicated and vastly more important than the gastroenteric digestion, because unless metabolism is

well carried on, the body is not well nourished and is diseased as a whole.

The question arises then, Why is it that a healthy man develops this condition which gradually irritates and destroys the cells of the body and leads to the production of connective tissue?

The answer is, that it is because of the disturbance of metabolism.

The nature of this disturbance of metabolism is very obscure, and the hypothesis that I have elaborated is that it is due to a disturbance of the relation of particular proteins to the body cells. In other words, the cells of the body become sensitized to particular proteins.

If you take a guinea pig and inject into its blood a small amount of egg albumen, which is a simple form of protein, the pig becomes sensitized to white of egg. If later, you give the pig more white of egg, all the cells react in a manner known as anaphylaxis, and very often the guinea pig dies. That is a simple laboratory example of sensitization.

If human beings become sensitized to proteins, which seems to happen from nervous shock, acute food poisoning, some infectious disease, or something else that makes a profound impression on the organism, from that time on the cells of that person's body may be unable to deal with the particular protein in question. Bacteria from a form of suppuration may provide the offending protein.

We do not have to go very far to find examples of food sensitiveness. You all know people who cannot eat fish, strawberries, or this or that kind of food, and are made sick by them.

I saw a gentleman this morning who, one Easter when he was a boy, gorged himself with eggs. He ate a great many eggs—I don't know how many—and was made very ill, so that he had nausea, vomiting and fever. He was confined to his bed and made a slow recovery. It was a case of acute food poisoning, from eating a great number of eggs. Following that, every few days he would be sick again. Finally it was discovered that if he ate eggs it made him absolutely ill. He stopped eating eggs, or anything with eggs, and got on well. For thirty years the man could not eat eggs or any article of food with eggs in it because that poisoning had caused him to be sensitive to eggs.

The question of food idiosyncrasy is so extraordinary that there seems nothing about it that can be beyond belief. I know an old lady who cannot eat mutton. Mutton always makes her very sick. On one occasion there was nothing in the house where she was visiting but mutton. So her host took a scrap of mutton and cooked it in some way to conceal its flavor, and told her it was venison. Almost immediately upon eating it she became violently ill and everyone thought she was going to die. Finally, her host confessed to her what he had done, and she exclaimed, "Oh, I know I won't die—I have been through this so often and did not die." She got through all right, but was very much frightened before she knew what was the matter.

These instances of sensitization to food are extremely important in connection with this general question of cellular disease leading to organic degeneration in the advanced form which is known under the general name of arteriosclerosis.

Unfortunately—I say unfortunately because I mean it—food poisoning is not by any means always accompanied by disagreeable symptoms. In fact, food poisoning may be accompanied by agreeable symptoms, just like any other poisoning. If a person is slowly poisoned by arsenic, it gives him a sense of well being until it is withdrawn. The same is true of other poisons. If a person is poisoned by meat, the withdrawal of meat is accompanied by a sense of prostration, and the restoration of the meat by stimulation. If the person is not poisoned by the meat, it can be withdrawn without any particular discomfort.

The natural history of the production of arteriosclerosis is, I believe, as follows: The person goes through a period of great nervous shock or strain, some very acute illness, or some acute food poisoning, and this produces a change in the relation of the body cells to the customary food proteins. The person may be sensitized to meat, fish, eggs, or other proteins. When a person has been sensitized to food protein and goes on eating that food, the cells of the body are irritated and some of them destroyed, and the organs become defective and are not able to do their work properly. When the kidneys become markedly sclerotic they do not function normally, and Nature attempts to make them function better by a rise of blood pressure. This rise of blood pressure leads to hypertrophy of the heart. It leads to thickening of the blood vessels and that creates a vicious circle. The high blood pressure damages the blood vessels and the kidneys are further and further damaged until finally we get the picture of cardiovascular renal disease.

Such a person coming under medical observation is ordinarily said to be suffering from one or other of several conditions—either heart disease, blood vessel disease, or kidney disease. In reality, it is all one thing. It is cardiovascular renal disease to which for convenience we have given the name arteriosclerosis.

The cardinal symptoms of arteriosclerosis are hard to define because the disease is not a symptomal disease. Nature provides a margin of safety in the heart, blood vessels, and kidneys that is very wide. So the heart is very badly damaged, the kidneys are very defective, and the blood vessels are greatly thickened before nature complains. Thus the person with arteriosclerosis has no symptoms in the earlier stages of the disease. He has certain objective signs which may be discovered by examination.

As far as I know, the first symptom of arteriosclerosis is pain in the chest on exertion after eating. The quickest way to relieve this pain is by treating the heart. Nitroglycerine properly administered acts almost like magic in this type of cardiac pain.

This disease is not found in any of the text books, but I believe that a clear conception of its nature as a general disease that attacks so many people is of great importance. I know that it is of great importance to me in my work, which is limited to cardiovascular renal disease. When I treated kidney, I never helped my patient. When I tried to soften the arteries I did my patient a good deal of harm. But since I have treated the body as a whole, and regarded the sufferers as victims of disturbed metabolism, I am sure the hygienic measures that I have advised have helped a great many of them.

Thus it would seem that the disease called arteriosclerosis, which is really cardiovascular renal disease, is primarily due to a disturbance of metabolism extending over a long period of time. This disturbance of metabolism consists in a sensitization of the cells of the body to particular proteins ordinarily found in food. Meat proteins are most often to blame. Fish proteins are sometimes to blame. Egg proteins are also harmful to a good many people. This process is subsymptomatic for five, ten, or fifteen years until such time as a sufficient number of cells have been destroyed to impair the functions of the organs. This gives rise to symptoms and the disease is discovered.

The remedy in this disease is to be found in the discovery and removal from the dietary of the offending proteins, meat being most common, and in the correction of metabolism by physical methods, particularly exercise. Exercise is the greatest stimulant of metabolism there is. Exercise makes the patient breathe deeper, it helps the digestion of food, and stimulates the kidneys. It is the great stimulant of metabolism. Exercise has an important place in the treatment of arteriosclerosis. First diet and then exercise. The third important thing is attention to the intestinal tract.

We cannot throw overboard all that has been said of late years as to autointoxication, intestinal stasis, and all these things, but there is a remedy that is the best for dealing with the intestinal condition. Serial doses of castor oil, out-of-door exercise, and diet from which the offending proteins have been removed intelligently, so that there is no protein starvation, lead to a condition of improvement that makes further attention to the question of autointoxication unnecessary.

This is the cellular theory of arteriosclerosis, with the hygienic treatment that logically follows its adoption.

In addition to this, we have to treat the sick person. The general plan of treatment—the diet, out-of-door exercise, and so on—is the underlying basis, but you have to treat the individual. When there is cardiac pain, attend to that.

The dilated heart, provided that there are symptoms of heart failure, must be taken care of with digitalis. The kidneys do not require any direct regimen. The psychical side of these persons is very important—they need reassurance.—“New York Medical Journal.”

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVII TORONTO, SEPTEMBER 15 1916. No. 9.

CANADIAN DENTAL ASSOCIATION

The eighth biennial meeting of the Canadian Dental Association was held in the Laval Dental School, Montreal, September 12, 13, 14 and 15, 1916. There were over three hundred dentists in attendance. Among the guests were Drs. J. d'Argent, Paris, France; N. S. Jenkins, New York; H. E. S. Chayes, New York; H. Jones, Norway, Me.; L. A. d'Argy, Waterville, Me.; L. R. Fafond, Lewiston, Me.

The exhibits were unusually large, many excellent new appliances illustrated. The clinics were especially good. The programme was good and well carried out, and the attendance of the sessions splendid. On the whole the dentists of Montreal and the Province of Quebec deserve great credit for conducting one of the best meetings in the history of the association. There was the largest representation of dentists from the Province of Quebec that has ever attended any dental association in Canada. Ontario was very poorly represented. It would seem that the dentists of Ontario have not shown as much interest in the national convention as they should. The Maritime Provinces were well represented. New Brunswick sent over one-fifth of the total number of dentists in the Province. If

Ontario had done as well as New Brunswick, which is much closer to Montreal, there would have been more than five hundred in attendance.

The address of welcome was delivered by Alderman Eudore Dubeau, Acting Mayor of Montreal, and replied to by the President, Dr. Barbour. In the President's address appears several suggestions which will be discussed under another heading.

Outside of the regular academic, or professional papers, the discussion of what dentistry was doing in the great war was a chief interest. The Committee of the Army Dental Fund reported having received over \$3,000.00 from the dental profession, and distributed it in the best interest of the Canadian Army Dental Corps. The report by Major Thompson of how the C.A.D.C. was organized, and the discussion of this, especially by Colonel Clayton, awakened an intense interest in the subject; besides this there was an address from Dr. J. d'Argent, a representative of the French Government on the organization of the Dental Corps in France. It would seem from this official report from the French Government that, while the Canadian Government organized a dental corps earlier in the war than did France, yet France has gone a great deal farther in working out details which makes dental services more efficient and valuable. It is worth any one's while, and especially dental officers, to carefully read Dr. d'Argent's address on this subject.

Dr. Weston Price's lecture on the relation of infection to general health and the cause of deformities, was most entertaining and instructive. He lectured over two hours in the forenoon, and the interest was so keen that he was asked if he would lecture in the afternoon, although his name did not appear on the programme. This he did, keeping a large audience interested until after six o'clock at the closing session of the convention.

One of the interesting parts of the entertainment provided was a trip around the Montreal harbor, given by the Montreal Harbor Commissioners. There was an opportunity given to see shipbuilding interests in connection with war supplies.

A banquet was given by the Quebec Dental Association, which was an unqualified success, the French consul, besides delivering an eloquent address, bestowed honors from the French Government upon Drs. Dubeau and Nolin for meritorious work done in dental education. A further report will appear later.

A luncheon was given in Lafontaine Park by the City Council, and a ride over the mountain, and the shooting the Lachine Rapids Friday morning.

A large part of the programme of the meeting was to have been provided by the Educational Committee of the association, but owing to some mishap in the transmission of the papers to one of the judges the report could not be given, nor could the papers be found. There were four contestants for the prizes given by the Educational Committee, which

were: First, \$500.00; second, \$300.00; third, \$200.00, besides suitably engraved gold medals. Dr. M. H. Garvin, Winnipeg; Dr. W. C. Trigger, St. Thomas, Ont.; Dr. Harold Box, Toronto, and Dr. W. E. Cummer, Toronto, presented essays for the prize. Dr. C. N. Johnson, Chicago, Ill.; Dr. E. C. Kirk, Philadelphia, Pa.; and Dr. J. Leon Williams, New York, N.Y., were the judges. It is hoped that within a few days the judges will have arrived at a decision and the result made public. The association decided to take the essays as read and report the results later.

DENTAL INEFFICIENCY

In the current issue of the "Dental Cosmos" appears an editorial entitled "Dental Inefficiency," the text of which is based upon the regulations for recruiting in the United States army and navy. The requirements for recruiting, as stated, are "six serviceable double teeth, two above and two below on one side, and one above and one below on the other side, and so opposed as to serve the purpose of mastication." The Editor calls attention to the fact that the arrangement of the teeth so as to make them serviceable as a means of mastication, is not even the most important reason why teeth should be cared for. He says "that the regulations should be changed so as to make the dental requirements more effective." It is to this aspect of the subject that we desire to direct the attention of the dental profession in the United States.

From our experience in recruiting in Canada there is only one change that can be made in the regulations if recruits are in demand. It was found in the early days of recruiting in Canada for the present war that such a large percentage of applicants were rejected on account of the condition of their teeth, that recruiting was much hindered. The great percentage of those rejected could be made acceptable by dental treatment. It was first advised by the dental profession that a dental officer, who alone can judge the dental efficiency of a recruit, should be present at all recruiting depots. This was impracticable. After more mature consideration the profession took the ground that practically every applicant could be made dentally efficient by dental services, hence at the present time and for the past year or more, no recruits have been rejected by the medical officers on account of the condition of their teeth.

The only change, therefore, that should be made in the United States regulations is that no applicants be rejected on account of the condition of their teeth, and that the dental officers take care of the soldiers at the expense of the Government after they are attested.

RECOMMENDATIONS WHICH APPEAR IN THE PRESIDENT'S ADDRESS

In the President's address of the Canadian Dental Association, which appears in this issue, appears a recommendation that the association should organize a sustentation fund for worthy dental students who are unable to fully finance themselves through college. Such a fund has been provided in many of the universities in the United States, and is now in existence in Dalhousie University. It was suggested by the Senate of the University of Toronto that a similar fund should be established for its students. Our judgment is that while the idea is worthy of the greatest sympathy of the association, yet it would be impossible to successfully work out, because it would not have the machinery to find out worthy cases. The association should strongly recommend to the dental colleges the establishment of such a fund.

Another suggestion in the President's address was that the dental colleges should give short courses in dentistry to women, qualifying them to perform certain operations, especially for the young. This is the establishment of dental nurses, as in the United States, under another name. We are not sure that such a suggestion should get the support of the dental profession, because it is the young who need the greatest care and advice, which half-educated women would be unable to give.

The President also suggested that there should be a Reference Board of this association to learn of localities which require dental services, and recommend them to dentists who are not located. It is in reality the establishment of a dental practice agency similar to that which exists in the medical profession. At the present time the dental college and the dental supply houses serve this purpose to the profession as a matter of courtesy.

OFFICERS OF THE DOMINION DENTAL COUNCIL.

President, J. S. Bagnall, Charlottetown, P.E.I.; First Vice-President, H. R. Abbott, London, Ont.; Second Vice-President, G. F. Bush, Winnipeg, Man.; Secretary-Treasurer, W. D. Cowan, Regina, Sask.

Capt. Guy Hume, who has charge of the dental department at the Ontario Hospital, Orpington, England, has been promoted to Lieutenant-Colonel; also Capt. Geo. Gow, who holds a similar position in No. 4 Canadian General Hospital, Salonika, has been similarly honored.

Twenty-five Canadian Army Dental officers have recently been drafted for overseas.

Reviews

T H E D E N T I S T ' S L I B R A R Y

Profitable Practice, by George Wood Clapp, D.D.S., author of "Brother Bill's Letters," "The Mechanical Side of Anatomical Articulation," "Prosthetic Articulation." Editor of "The Dental Digest." Published by the Dentists' Supply Co., New York, 1916.

The author of this book is a well-known writer and post-graduate teacher of dentistry. He says in the introduction that he was the author of "Brother Bill's Letters," which were lauded to the skies by many, and condemned by others as being gross and materialistic. No such charge can be laid against the book here presented. This is really a sane presentation of the business side of the practice of dentistry. The average dentist got no real help from "Brother Bill's Letters," except that in a vague sort of way he should charge higher fees, while as a matter of fact the chief advantage coming from "Brother Bill's Letters" and this work are along the lines of better methods of practice and economy. In an early chapter the author says that "\$3,500 is the average cost of education and equipment to begin the practice of dentistry," and sets forth that "the cost of his dental education is \$1,000, and \$1,500 chargeable to loss of time in obtaining his dental education, and \$1,000 for equipment, making a total of \$3,500." For the life of me I cannot see how a young man attending a dental college for three years, eight months each, pays \$450 fees on \$1,000. At the very least calculation a dental education and equipment costs \$5,000 at the present time. Dental equipment that costs \$1,000 is mighty poor equipment in Canada.

This book should be in the hands of every dentist who could read it over carefully several times and get the author's view-point, not that he should follow him in all his details, but that he could get a clear conception of the difference between gross earnings and net earnings. Some young men starting out to practice have an idea that they do not need to provide for repaying that which has cost them for their dental education.

The chapter on the history of spenders ought to be read carefully by young men. Personally I was never very much taken with "Brother Bill's Letters," but I am very much taken with this book, except in those places in which it introduces "Brother Bill's" methods of presentation.

Did you ever succeed in opening up the Mesio-buccal root canal of an upper second molar through a distal cavity? If you have, it would be worth while to explain to the profession at a clinic or through the columns of the Journal how you did it.

DENTAL OPERATIONS PERFORMED BY OFFICERS OF THE CANADIAN ARMY DENTAL CORPS IN ENGLAND AND OVERSEAS, JULY 15, 1915 TO JUNE 30, 1916

Headquarters C.A.D.C., 23 Earls Avenue, Folkstone, July 26, 1916.
Corps in England and Overseas, July 15, 1915, to June 30, 1916. •

Total Operations

reported to	Fillgs.	Treats.	Dents.	Prophys.	Ext.	Devit.	Total.
March 31, '16	86,887	15,304	10,898	10,710	66,079	11,732	201,610
April	12,343	1,737	1,886	1,393	10,841	1,377	29,577
May	14,874	3,270	2,372	1,501	13,618	1,724	37,359
June	14,479	3,160	2,630	1,503	12,205	1,589	35,566
Total	128,583	23,471	17,786	15,107	102,743	16,422	304,112

NOTE.—Reports from a number of officers overseas have not been received. It is estimated these would increase the total some 20,000 to 25,000 operations.

LT.-COL. J. ALEX. ARMSTRONG,
Director of Dental Services, Canadian Contingents.

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Dominion Dental Journal

VOL. XXVIII.

TORONTO, OCTOBER 15, 1916.

No. 10.

Original Communications

THE WORK OF THE FRENCH DENTISTS FROM AUGUST, 1914, TO JULY, 1916, DURING THE GREAT EUROPEAN WAR

BY PROF. J. D'ARGENT, D.D.S., of the Ecole Dentaire of Paris.

(Translated from the original French, for delivery before the Canadian Dental Association, Montreal, September, 1916, by William McLaren, M.A., B.Sc., Senior French Master in the Montreal High School and Matriculation Examiner for the College of Dental Surgeons of the Province of Quebec.)

I.—INTRODUCTION.

GENERAL SITUATION AT THE DECLARATION OF WAR.

Amid the turmoil of the present terrible world war, a veritable cataclysm of history, let loose on Europe on August 1st, 1914, by the Germanic Empires, joined later by two perverted and vile peoples, whose only thought is of their prey, numerous edifying facts may be observed, full of lessons for us.

Of all the European powers, two only were truly prepared for war—Germany and Austria. The simple fact is that for long beforehand they had foreseen and had desired such a war in order to enable them to finally establish their tyrannical supremacy, first over Europe, and then over the entire world.

Of all the countries menaced by the Central Empires, but maintained by them in a state of comparative tranquility by their pseudo-amicable speeches and demonstrations, France possessed the best military organization, or rather, the least defective, if one judges from the point of view of present methods of war which she either was ignorant of or had neglected to practise.

But her carelessness, or her errors, or her forgetfulness, were but the result of her blind confidence in the pacifist protestations of her hereditary enemies, by which, with the ability of their race, the latter disguised their formidable preparations and their disconcerting tactics.

The gaps and deficiencies were of great number, and some of grave importance, as, for example, the almost complete absence of heavy artillery, the insufficient supply of machine guns, the too marked visibility of

uniforms, etc. In this fight for honor, and even for life itself, a fight engendered by the execrable folly of German Imperialism, two elements, which our enemies believed to exist no longer, were actually present, nevertheless, in great profusion, namely, the valor and genius of the French race.

These hereditary qualities were still further augmented at the declaration of war by the "Union Sacrée," proclaimed with such eloquence by the President of the Republic, and brought into being with acclamation in the Chamber and in the Senate. Our adversaries, far from expecting such a thing, had even counted on a division of parties to hasten our defeat.

It was "The Hour," sung in the month of August, 1914, in lines so eloquent by Dr. Joseph Nolin, of Montreal, and this "Union Sacrée," like the symbolic plume of another glorious epoch, assembled about the flag of France all the elements capable of defending her, that is to say, all Frenchmen.

By her valor in winning the battles of the Marne and of the Yser, and since then in holding the Germans in check at Verdun in face of the most spirited and desperate attacks, France has saved the liberty of the world.

By her genius she has been able, in the midst of war itself, to organize such a resistance that her allies have had time to prepare and to bring forward their precious and timely aid. We have seen this resistance, leading on in the first instance to the turn of the tide, as it will one day culminate in a complete victory.

In bringing to your notice here and there throughout this work certain imperfections, either in the point of view or in material organization, we are far from having obeyed an impulse of criticism, which would indeed be out of place at the present time, but rather have we been imbued with a spirit of progress, almost fanatical in its nature.

We are of the opinion, in fact, that frankness and precision in the discovery and avowal of error are indispensable if such error is to be speedily eliminated, and if we are to learn a profitable lesson from it.

We are absolutely convinced that the experience of this present war will leave its mark on the world for ever, and will prevent the recurrence of a state of affairs which all but made us lose our liberty and become the subjects of a "kultur" blacker than the most infamous barbarism.

2.—MEDICAL SERVICE.

If a certain lack of foresight in matters purely military existed, what are we to think of the medical service?

We shall go no further than to say that, in this department also, after many painful facts had emerged at the outset, the organization improved each day, until at the present moment no criticism of any importance is laid at its door.

An exaggerated confidence in the maintenance of peace, augmented by certain budgetary considerations, had resulted in the postponement of the

putting into execution of a programme already perfect in every detail, and which we were finally obliged to bring into being in front of the enemy himself, and in the midst of the confusion and upset of the first shocks, which, as it happened, were unfavorable to us.

At the declaration of war, then, the medical service was in a state of almost complete unpreparedness, especially with regard to first aid to the wounded and the conveyance of the latter to the rear. But in order to be quite fair to everyone, and to remove all trace of suspicion, we must proclaim aloud that at all times and upon all occasions, even in the most furious battles, the members of the medical corps themselves well knew how to do their duty, at the risk of their own lives.

Many of them indeed have died or have been severely wounded on the field of honor in the accomplishment of their sacred mission.

3.—DENTAL SERVICE.

And what of the Military Dental Service? It did not even exist. To bring out the importance of the war-work of the French dentists, and more especially that of the "Ecole Dentaire" of Paris, to which is due the creation of the first institutions destined to take care of the soldiers affected by dental troubles, or by wounds in the jaw or face, it seems well to place on record the state of affairs previous to the war.

We repeat, therefore, that no military dental service of any kind then existed.

The National Dental Federation had indeed asked the Minister of War for the creation of such a service. This request had been made at various times, and, notably, with even more insistence than usual, in the months of March and May, 1913, at the moment when Parliament was bringing about certain changes in the organization of the army, and had to come to a decision regarding the three years' military service, of which, may we add in passing, that the least that can be said is that it saved France! But the Minister of War had not merely contested the utility of the creation of a dental service—he had gone as far as to completely deny such usefulness and had stated that, after all, in time of war, as in time of peace, the dentists could not but be an annoyance and an encumbrance.

From the very start of hostilities events soon showed the absurdity of this arbitrary sentence.

Such a paradoxical judgment cannot but occasion considerable surprise. It can only be explained—(it cannot possibly be excused)—by that foresight of which government departments are so proud, and which makes them disregard all advice from the outside, even when faced with problems whose character is such that consultation with specialists seems so obvious a course to pursue that it may be regarded as indispensable.

The latter at least is the method of procedure in private companies,

no doubt because in this case the interests of the individual are the interests of all.

Yet the claims of the dentists, which had been so completely set aside, were based on arguments of the very first order, and had the additional merit of being entirely disinterested in their character.

They had as objective, in time of peace, only the tending of soldiers affected by dental troubles, or the prevention of these troubles, and in war time the taking care and restoration to health of those wounded in the jaw and face.

In its request to the Minister of War, in which was included a list of the different pathological or traumatic conditions of the jaw by which soldiers are liable to be affected, the "Fédération Dentaire Nationale" laid stress on the importance of the course of study which dental surgeons are required by the State to pass through. This course of study extends over five years, of which two are spent in acquiring the practical art of teeth-setting, and the National Dental Federation drew special attention to the existence of classes and practical work in the department of restorative prosthesis, organized in view of a war which was always to be feared, and showing in every way a fine sense of foresight on the part of the dental schools.

The F.D.N. only asked that the help of their practical workers should receive official recognition by the creation of a corps of military dentists, like those of the doctors, the druggists and the veterinary surgeons. The decrees of 3rd and 4th March, 1916, instituting the Corps of Military Dentists and the Corps of Naval Dental Surgeons, after sixteen months of war and of evidence of the numerous and varied services rendered by the dentists, are the best proof that the claims made before the war on behalf of the dentists were well founded.

But in spite of the eloquence of the motives invoked as reasons, the dental surgeons were not given a hearing, and they found themselves cruelly out of it at the moment when war overtook us.

4.—DECLARATION OF WAR.

War was declared on France by Germany on the 4th of August, 1914, but our mobilization, ordered on the 2nd of August at the declaration of war on our ally Russia by Germany, left little doubt as to the imminence of this event.

At one bound France was on her feet!

Five million Frenchmen, called up for military service, or already serving, thrilled at the call of the Motherland, and full of ardor and enthusiasm, in perfect order, rejoined their regiments, or presented themselves at the enrolment offices, whither numbers of foreigners were already flocking to offer to France, by the sacrifice of their lives, the supreme testimony of their devotion and reverence.

5.—EFFECTS OF THE MOBILIZATION ON THE DENTISTS AND THEIR INSTITUTIONS.

The dentists, either called up or enrolled as volunteers, amongst the latter being a goodly number of students, left at once and were scattered throughout all branches of the service, since no measures at all had been taken for their utilization as technicians in the army. Having become acquainted during their service in time of peace with the deplorable state of many of their comrades' teeth, the majority of these dentists, animated by a fine professional spirit, took with them in their kit, in addition to their regulation supplies, a small case of instruments, not hesitating to add a little to the weight they had to carry, in anticipation of the relief they would be enabled to afford to those around them.

On account of the mobilization, the Ecole Dentaire of Paris suddenly found itself deprived of three-fourths of its governors, professors and students, apart from those who were already on holiday in the closing days of July.

The Board of Governors, consisting of 20 members, was reduced to four—the President, M. Godon; the Vice-Presidents, Messrs. J. d'Argent and Roy, and the Treasurer, M. Bioux—exempted from military service on account of their age, but who demonstrated, as the sequel proved, that they could still be of service to the Motherland in roles not without use and importance, even if they lacked the brilliance and glory of those of the combatants.

As early as the 3rd of August, 1914, they met to deliberate, not only concerning the carrying on of the college dispensary—the classes being closed on account of the holidays until the end of October—but also to decide what was best to be done from a professional point of view, in presence of the grave events which were about to take place. In order to have the benefit of the best advice possible they called in Messrs. G. Viau, Honorary President, and P. Martinier, Honorary Director of the college.

The Dental College was deserted not only by the professors and students, but also by the patients, who were kept elsewhere by preoccupations more compelling than their sufferings.

As this state of affairs might possibly last for a long time, the Board decided to close the college temporarily. The management of the "Assistance Publique" of Paris, however, with which our college is associated, notified us almost at the same moment that the majority of the dental clinics of the Paris hospitals were suspended as a result of the mobilization of their active heads. Accordingly the above-mentioned decision of the Board was rescinded, which resulted in the bringing to our dispensary of a stream of patients from many quarters of the city.

At the same time, in order to ensure a proper service, the Board, by means of a circular letter, asked for the help of all non-mobilized mem-

bers of our society, and they had the extreme satisfaction of instantly receiving numerous acceptances.

In a few days the dispensary was once more in full operation.

And it was indeed a most impressive spectacle to see old practitioners, for a long time separated from each other by the ups and downs of life, back again in the surroundings in which their studies had been made, assembled round the same operating-chairs, such dear witnesses of their work and of their professional training.

As soon as the dispensary reopened, those of the men students who were too young for the army, as well as the women students, putting an end of their own volition to their holidays, came forward to offer their services. In this way a very important public service was maintained and carried on, thanks to the Ecole Dentaire of Paris.

6.—THE WORK OF THE FRENCH DENTISTS.

The war-work of the French dentists had begun; it was soon to become of the greatest importance, and to establish itself in such a way and to such an extent as to realize to the full in a natural and normal manner all their principal claims of pre-war days.

The progress of the war-work of the French dentists divides naturally into nine stages, each one marked by the creation of a new branch, as follows:

1. The committee for relief of those wounded in the jaw and face—founded 5th August, 1914.

2. The Military Dispensary—at first an extension of the Civil Dispensary and later an independent formation—founded 5th August, 1914.

3. Branch for the soldiers disqualified on account of their bad teeth—founded 3rd January, 1915.

4. The branch for the convalescents, at the Lycée Michelet—founded 11th June, 1915.

5. The dental automobile service—founded 31st, July, 1915.

6. Department of fraternal aid for the Belgian and French dentists ruined by the war—founded 31st July, 1915.

7. Branch for the re-education of discharged soldiers—founded May, 1916.

8. The Canadian Hospital branch—founded June, 1916.

9. The Inter-Ally Dental Congress, for November, 1916.

7.—THE COMMITTEE FOR RELIEF OF THOSE WOUNDED IN THE JAW AND FACE.

The medico-surgical experience in previous wars, and notably in the most recent, the Russo-Japanese campaign and the two Balkan conflicts, was too well known for us not to be aware that in a short time many of the combatants in the present struggle would be suffering from wounds in the jaw and face.

The absence of any kind of organization for their help would mean leaving these unfortunates, if not without attention of any kind, at least without proper and intelligent care.

These considerations, added to our desire to show spontaneously the considerable role which dentists are capable of playing in time of war, the role which we had defined in our reports to the Minister of War, and which had until then been disregarded entirely, made us decide to create a committee for relief of those wounded in the jaw and face.

This committee was composed of members of the college teaching staff not called to the colors, as well as of members of the different professional societies who responded to the call of our circular letter of 5th August, 1914, which was sent to all French dentists.

A Board of Directors was nominated to take charge of the different activities of the committee and of its technical management and administration.

The Board consisted of the following members: MM. Godon, Honorary President; Roy, President and Chief of the Clinics; G. Viau, Vice-President; P. Martinier, Chief of the Technical Department; J. d'Argent, Chief of the Administrative Work; H. Villain, Secretary; L. Bioux, Treasurer.

The Dental College authorities placed at the disposal of the committee their own staff, their laboratories and their clinics. But its financial situation was evidently to be seriously affected by future events, more especially on account of their probable long duration. Accordingly a public subscription to supply funds to the committee was opened, the latter undertaking to furnish all appliances necessary for the wounded men.

Thanks to this relief fund, to which the dentists of the Province of Quebec so generously subscribed upon two occasions, the committee was enabled to proceed with its work and to render most eminent services to the wounded men entrusted to its care.

Although our students in dental surgery have a course of restorative-prosthesis, and although our final examinations are evidence of their competence in this science, yet the slight practical application which is made of it in time of peace by the majority of practitioners, soon unfits them for this class of work.

It seemed a useful and even necessary preliminary, therefore, to familiarize the members of the committee with the different kinds of apparatus and of operations which they would be called upon to carry out.

With this object in view, Messrs. Roy and Martinier gave a series of lectures and practical demonstrations, in the very earliest days of our work, and before any wounded men had arrived.

The result was that when the first wounded came to the clinic, on the 9th September, 1914, they were at once enabled to receive the attention which their state required.

These men came from the different army hospitals in the region of Paris.

A certain proportion of them had been transferred from the provinces to these hospitals because the Relief Committee was the sole formation existing at that moment for the prosthetical treatment of fractures of the jaw according to the teaching and the training of dentists. The wounded not capable of being transported were cared for where they might happen to be, in the various hospitals.

The first premises allocated to the Relief Committee, and comprising eight dental operating-chairs, very soon became too small, and on two occasions they had to be enlarged considerably.

At last, in November, when the Dental College took up its theoretical and practical classes again, a final rearrangement found the committee installed in a series of well-fitted buildings of some size.

At the end of 1914 the Committee for Relief of the Wounded in the Jaw and Face, comprising, as it did, a surgical department, a clinic and a laboratory of facial prosthesis, with thirty dental operating-chairs, in addition to numerous other appliances, departments of drafting, photography, moulding, modelling, radiography, massage and orthophony, could well be considered a model institution.

8.—THE MILITARY DISPENSARY.

During this same period, confirming the observations made previous to the war by the Fédération Dentaire Nationale to the Minister of War, the college dispensary had frequent visits from soldiers belonging to the entrenched camp of Paris, who were suffering from dental troubles of all kinds. Indeed, their numbers, always on the increase, soon became such that it was necessary to give over to them entirely three mornings and every afternoon of each week. Only three mornings were thus left for the civil patients.

9.—BRANCH FOR THE SOLDIERS DISQUALIFIED ON ACCOUNT OF THEIR TEETH.

Very soon the attention of our staff was drawn to the position of those soldiers who no longer possessed teeth enough to masticate normally, and who were even unable to chew their food sufficiently for its proper digestion.

The majority of these, having only a few shapeless teeth and a root or two, seemed in a very bad condition of health, bordering on gastrointestinal troubles.

Imbued only by a spirit of humanity and of professional zeal, the committee was tempted to arrange for these soldiers undergoing full and proper treatment, including extractions and the prosthetical restorations rendered necessary by their deplorable condition. But, on the one hand, the short time which was at the soldiers' disposal for having themselves looked after, and on the other hand, the very heavy expense entailed by such treat-

ment on account of the number of cases, rendered such treatment impossible without the consent and help of the military authorities.

The Board realized to the full the great service there was to render to individuals, as well as to the army itself, but the immensity of the undertaking, from every point of view, compelled the Board to hesitate, though with regret.

An incident then occurred which resulted in the removal of all hesitation.

At the end of December, 1914, an artilleryman belonging to the active army, and sent to us by Dr. G. Villain, the general secretary of the college, who was then serving with the artillery auxiliaries attached to the entrenched camp of Paris, presents himself at the clinic, where he relates that the medical officer of his depot hesitates to send him to the front, in spite of his fervent desire to fight, on account of the obvious defects in his masticatory organs, which might soon lead to injuries to the digestion tube and to his being sent to the rear with gastro-enteritis.

Dr. G. Villain remarked the frequent occurrence of such cases at his own depot, and by increasing his figures in proportion for the whole of France, deduced so considerable a total of disqualified soldiers that the very thought of it made one sad. The total number of soldiers of whose services the army was deprived on this account represented two full army corps!

On his recommendation, which was approved by the medical officer of the depot, the Board decided to present this young artilleryman gratuitously with a set of artificial teeth. The result was that some time later he was able to rejoin his battery.

Citing this case, in addition to other information of a precise character, the Board, conscious of a real service to be rendered to the country, in a detailed report to the Minister of War, offered the help of the Dental College of Paris towards the solution of the problem of the soldiers disqualified on account of bad teeth. Such help would consist in the making and fitting of sets of teeth.

Besides, this question was already beginning to demand attention at the Ministry of War itself, on account of the steadily increasing number of such cases in the hospitals and in the depots, and still more on account of the many discharges which this condition alone had been the cause of.

The college undertook to supply from its own resources the first two hundred sets of teeth. Knowing the tardiness which usually characterizes all administrative decisions, and convinced of the importance of the role to be played, not only from the point of view of national defence, but also with regard to the professional prestige which might well result from their action, the Dental College, without further delay, voted the necessary funds and threw itself deliberately into the work at the beginning of January, 1915.

All the branches of dental work were united in a single body, which was called the "Military Dispensary," the management of which was entrusted to the following board: Messrs. J. d'Argent, President and Chief of Operative Dentistry; Blatter, Chief of the Clinic of Dental Surgery; G. Villain, Chief of the Department of Prosthesis, and in charge of Reports and Statistics; G. Groce Spinelli, Secretary.

The work of caring for the soldiers disqualified on account of bad teeth very soon assumed great importance, while still preserving its voluntary character. The numerous sets of teeth presented to soldiers of all ranks, up to and including that of lieutenant, soon, however, began to be noticed by the heads of the active army, as well as by those at the depots. These sets of teeth, far more efficaciously than the best advocate could have done, pled the cause introduced by the dentists, and which they offered as a solution of the weighty problem connected with the detention in a state of inactivity in the hospitals and depots of soldiers having bad teeth.

But in spite of the compelling eloquence of this demonstration, it was only in July, 1915, after having gratuitously supplied 600 sets of teeth, that the Military Dispensary received ministerial recognition and approval.

It must be noted also that such recognition coincided with the appearance at the head of the Medical Service of Under-Secretary of State Justin Godart.

With great certainty of judgment, added to extreme kindness of heart, Mr. Justin Godart made observations for himself by visiting the various dental groups, which embodied the results already achieved by the initiative of the dentists, and not only did he give them the official stamp of approval, but he recognized the necessity for the formation of a corps of dentists to meet the needs of the armies in the field.

The Dental College at last felt itself rewarded for its initiative and its sacrifices, and the dentists saw opening up before them an immense field of work in which they would be able to demonstrate their capacity and their professional knowledge, adapted to the needs of the army.

Little by little those technicians who are engaged in adapting the usual dental processes to military requirements in time of war, have been led by their experience to recognize that their ordinary practice amongst their civil patients has to undergo considerable modification when dealing with wounded men.

They have observed, in short, that certain classes of operation are either impracticable or incompatible with the exigencies of military service, and they have been gradually led to co-ordinate and to condense the processes which have seemed the most practical to them, and in this way to create a very much simplified technique suited to the conditions met with in the majority of cases.

They have, in short, created the dentistry of war.

10.—CHRONOLOGY OF THE DEVELOPMENT OF THE WORK OF THE DENTISTS.

The movement, set on foot by the Ecole Dentaire of Paris with the view of helping those soldiers suffering from injuries and requiring the dental surgeon's specialized attention, as well as with the view of demonstrating in tangible fashion the importance of the services which can and must be rendered to the army by the dentist, was not destined to remain isolated.

The other dental colleges of France, the Ecole Dento-Technique, the Ecole Dentaire of Lyon, as well as that of Bordeaux, with all of which our own Ecole is in constant touch, followed vigorously in our footsteps, and each of them organized services similar to those of the Ecole Dentaire of Paris.

The military authorities, informed, in due course, as much by the bodies to whom we were rendering service, as through our own reports, were not long to remain indifferent or uninterested. This can easily be seen from the following chronological statement, which marks the progressive development of the seed sown in good French soil by the dentists:

October 15th, 1914.—The Medical Inspector-General, head of the medical service of the military government of Paris, informed the majors of his command, in a letter addressed to them, of the organization of the Committee for Relief of Soldiers Wounded in the Jaw and Face, and requested them to take advantage of its help.

October 15th, 1914.—On the same day, in response to a petition from the F.D.N., calling the attention of the Minister of War to the position of the dentists disseminated throughout all the corps of the army, and also to the useful help they were giving to the wounded, a ministerial decision authorized the ultimate turning over to the ambulance section of all surgeon-dentists.

November 10th, 1914.—The medical service founded centres of maxillo-facial prosthesis, and of facial restoration, in Paris, Lyon and Bordeaux.

December 21st, 1914.—By a ministerial circular it was arranged that a dentist skilled in prosthetic work should be attached to each clearing hospital.

April 14th, 1915.—The Minister of War accepted the co-operation of the Ecole Dentaire of Paris in the tending of soldiers, and agreed to recall all dentists with the colors in order to assist the extension of such services.

May 10th, 1915.—The Minister of War recognizes and accepts the co-operation of the Relief Committee founded by the Ecole Dentaire of Paris, which for nine months had been operating on a purely voluntary basis. From this day onwards new centres of stomatology and of maxillo-facial prosthesis are created in the chief cities of France. At the time of writing, August, 1916, they make a total of forty.

June 11th, 1915.—The Ecole Dentaire of Paris is asked to organize an army hospital of 200 beds at the Convalescent Hospital in the Lycée Michelet, a branch which is being operated by a personnel and with apparatus lent by the Ecole.

July 31st, 1915.—A ministerial circular appears granting official approval to the work for the soldiers disqualified by bad teeth. This circular also has reference to the furnishing of the necessary sets of teeth.

August 25th, 1915.—The Under-Secretary of State for the Medical Service visits our maxillo-dental army hospital at the Lycée Michelet and shows his enthusiastic approval.

August 31st, 1915.—The Under-Secretary of State for the Medical Service receives a delegation from the F.D.N., accompanied by the governors of the Ecole Dentaire of Paris, and discusses their work with them, as well as the general situation of the soldiers who are dentists.

September 13th, 1915.—The above Under-Secretary visits the various military centres of the Ecole Dentaire, the Relief Committee and the Military Dispensary, and he recognizes the necessity for numerous attachments of dentists, as well as the important role they play in the medical service. He considers their situation in general.

March 2nd, 1916.—The decree instituting the Corps of Military Dentists appears.

March 3rd, 1916.—The decree instituting the Corps of Naval Dental Surgeons appears.

II.—THE BRANCH AT THE LYCEE MICHELET.

We have already mentioned above that on the 11th of June, 1915, the Ecole Dentaire of Paris was asked to organize an army hospital of 200 beds at the Convalescent Hospital in the Lycée Michelet, which is situated in the near vicinity of Paris, at Vannes-Malakoff, in the middle of a superb park.

This request deserves to have some attention paid to it on account of the lessons it contains. In the first place it meant the approval and justification of the work pursued without ceasing by the Ecole Dentaire of Paris. It also meant a direct appeal to its administrative organization, which was so far removed from the interminable formalism of government institutions. The implied expectation was entirely justified, for in less than a fortnight, the new "Michelet" service was working normally, thanks to the liberal and practical spirit of the Board of Governors of the College. Foreseeing a never-ending delay in the allocation of funds and in obtaining the materials for working, the Board quickly proceeded with the installation, supplying the furnishings and tools necessary for the various departments of surgery, dentistry and maxillo-facial prosthesis.

On the 25th of August, 1915, when the Under-Secretary of State for the Medical Service paid an unexpected visit to our Michelet Hospital, he

showed himself so pleased with it that the cause upheld by the dentists appeared, if not finally won, at least well on its way towards a rapid and favorable decision.

Amongst the patients at the Lycée Michelet we found a certain number wounded in the jaw and face, who had already been treated in some medical unit, but by methods entirely different from those practised by dentists. These cases included examples of defective consolidation, of pseudarthrosis, and of such imperfect restorations that the number of those detained at the hospital was continually increasing. The latter were simply remaining there eternally, because of their being unable to be discharged or sent back to their regiments, so great and so horrible were their deformations.

That our prosthesis was apparently too late in such cases did not become a source of discouragement to us. Rather were such examples, sad as they were, living proofs, alas, of the truth and the sincerity of our warnings and assertions in pre-war days.

These cases also constitute a field of study and interesting work, and call for an extension of the methods employed so far.

The establishment of our hospital at the Lycée Michelet demonstrated the irresistible influence which our methods, our precautions and our specialized work have over authority and the military spirit. It also embodies the final official recognition of the efficacy of our methods.

12.—THE DISPOSITION OF THE DENTISTS SERVING WITH THE COLORS.

Up to the beginning of 1915, when the Military Dispensary was created, the care of wounds received in battle and of dental maladies had been assured at the Ecole Dentaire of Paris by the presence of that part of the teaching body not mobilized, the students, and our benevolent colleagues on the Relief Committee.

But, from this moment on, the increase in the number of entries was so great that it became impossible to meet all the claims made on us, with our limited personnel, and giving only the mornings to the work.

From all quarters, dentists who were serving in some branch or other, wrote us to complain of their illogical situation. They were seeing so many men wounded in the jaw, and so many soldiers suffering from dental injuries who were obliged to do without proper care, and yet were unable to help them.

Besides, we had under our very eyes, in the entrenched camp of Paris, a typical example of these strange and peculiar arrangements of men.

Our colleague, Professor Blatter, associate-director of the Ecole Dentaire, and President of the F.D.N., was sent as a soldier of the second class to look after a stock of coal-oil. Other colleagues were guarding the roadways and railways, were driving automobiles, or were washing floors in some military hospitals, etc. The most diverse posts

had devolved on them, anything but that of military dentist, which post, indeed, did not yet exist, but the need for which was being felt every day with increasing intensity.

We shall not say that it sufficed but to point out these anomalies to have them corrected; there were so many reforms always being proposed that one did not know whom to listen to.

Finally, thanks to our insistent requests, upheld and justified by facts and necessities only too obvious; thanks, also, to the intervention of our Honorary President, Senator Strauss, we had the satisfaction of seeing our director exempted from being called up and attached to the Ecole Dentaire of Paris, in order to assist in the services devoted to the needs of the army.

The principle of the proper disposition of the dentists having been admitted, and the immense utility of our intervention having forced its way through, even to penetrating into the minds of the military authorities, other surgeon-dentists were commissioned, first individually, and then in groups, according to the extension of our needs.

And thus it is that at the close of July, 1916, sixty-five experienced practitioners, nominated by us, were collaborating in the military activities of the Ecole Dentaire of Paris, with ten hours of attendance daily, thus ensuring a proper amount of care for the patients and a sufficient and intensive production of sets of teeth and other appliances, the volume of which will be grasped from the following tables, taken from the monthly reports for July, 1916:

13.—STATISTICS OF THE WORK OF THE MILITARY DISPENSARY
SINCE 5TH AUGUST, 1914, AND FOR JULY, 1916.

7,608 soldiers registered from 5th August to 26th June, 1916.

631 soldiers registered from 27th June to 26th July, 1916.

8,239 soldiers treated in 63,179 visits, comprising 146,807 operations,
as follows:

A.—Clinic of Dental Surgery.

Operations from 5th August, 1914, to 26th June, 1916	33,178
Operations from 27th June, 1916, to 26th July, 1916	3,328
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	36,506

B.—Clinic of Operative Dentistry.

Operations from 5th August, 1914, to 26th June, 1916	44,508
Operations from 26th June, 1916, to 26th July, 1916	5,235
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	49,743

C.—Clinic of Dental Prosthesis.

Operations from 5th August, 1914, to 26th June, 1916	48,208
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Operations from 27th June, 1916, to 26th July, 1916	4,754
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	52,962

D.—Laboratory of Prosthesis.

Sets of teeth from 5th August, 1914, to 26th June, 1916	7,010
Sets of teeth from 27th June, 1916, to 26th July, 1916	586
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	7,596

Cases from 5th August, 1914, to 26th June, 1916	132,904
Cases from 27th June, 1916, to 26th July, 1916	13,903
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Total Cases from 5th August, 1914, to 26th July, 1916. 146,807

The 586 sets of teeth in July, 1916, represent the replacing of 4,320 teeth.

14.—STATISTICS OF THE WORK OF THE RELIEF COMMITTEE SINCE
9TH SEPTEMBER, 1914, AND FOR JULY, 1916.

1,345 soldiers registered from September 9th, 1914, to 26th June, 1916.

49 soldiers registered from June 27th, 1916, to 26th July, 1916.

1,394 soldiers treated in 14,985 visits, comprising 18,702 operations,
as follows:

A.—Clinic of Surgery.

From 9th September, 1914, to 26th June, 1916	7,679
From 27th June, 1916, to 26th July, 1916	512
	<hr/>
	8,191

B.—Preparatory Work for Prosthesis.

From 9th September, 1914, to 26th June, 1916	9,206
From 27th June, 1916, to 26th July, 1916	265
	<hr/>
	9,471

C.—Appliances Used in Restorative Prosthesis.

From 9th September, 1914, to 26th June, 1916	985
From 27th June, 1916, to 26th July, 1916	55
	<hr/>
	1,040

Cases from 9th September, 1914, to 26th June, 1916	17,870
Cases from 27th June, 1916, to 26th July, 1916	832
	<hr/>

Total Cases from 9th September, 1914, to 26th July, 1916. . . 18,702

<i>Wounded.</i>	<i>Appliances.</i>
169 fractures of upper jaw.	161 for reduction.
449 fractures of lower jaw (simple).	184 mixed, reduction and keeping reduced.
239 fractures of lower jaw (compound).	190 for keeping reduced.
126 retraction of scars.	110 retraction of scars.
411 diverse dental maladies.	356 for final prosthesis, bone and dental.
	36 for ante-operative prosthesis.
	3 for cranial prosthesis.
<hr/> 1,394	<hr/> 1,040

15.—THE DENTAL AUTOMOBILES.

If the organization of dental centres in the rear of the armies and in the interior of the country be a comparatively simple matter, this simplicity disappears as soon as the front troops, and especially those of the first line, are involved, because of their frequent moving about, making it impossible to set up any fixed installation.

It was in order to solve these difficulties that, on the dentists' recommendation, dental automobiles and trucks were constructed. These are cabinet laboratories, perfectly equipped and easily transportable, capable of following the troops in their movements, and of going wherever they are required.

The first dental automobile was inaugurated on the 15th of July, 1915. One dental automobile is now attached to each army corps.

16.—DEPARTMENT OF FRATERNAL AID FOR THE BELGIAN AND FRENCH DENTISTS RUINED BY THE WAR.

This abominable war, which absorbs so much energy in the training and disposal of men, the preparation of material and of provisions, the organization of the medical service, etc., leaves in its train a long trail of sufferings, of losses and of ruins which we have to tend, to make good and to rebuild.

It is the duty of those removed from the fighting, who are the constant witnesses of so much misfortune, to examine these conditions with calmness and clearness of judgment, so as to be able not only to sympathize with the victims, but to succor them as far as that is possible.

Over and beyond the official pensions to widows and wounded, there are many organizations having as their object the restoration of the districts that have been destroyed, and the re-establishment of industries which have been ruined by the war.

Certain of these institutions, in addition to coming to the help of individual sufferers, are co-operating at the same time towards the rebuilding of the national forces, by restoring to them workers deprived in whole

or in part of their means of action through the loss of their all, or through more or less serious mutilation.

The Dental College of Paris could not fail to take an interest in these humanitarian questions.

To this end was founded, in February, 1915, "The department of fraternal aid for Belgian and French dentists ruined by the war." A subsidiary foundation was "the branch for the re-education of mutilated soldiers."

The "Fraternal Aid" proposes to help all Belgian and French confreres who have suffered from the invasion, or in the defence of their Patrie, as well as those of our colleagues' families which are in a state of want and privation caused by the departure of the head of the house to the front.

This society, organized on the broadest and most liberal footing possible, grants its help to all needy confreres to whatever professional category they may belong, and whether they are members of our societies or not.

Not only is pecuniary help given, but, in addition, the society tries to find remunerative employment for them or for their families. Such employment, if it does not restore all that was lost, at least provides an existence free from want through the utilization of their own ability for work.

A huge international subscription, in which the Dental College of Montreal hastened to take its part, was opened amongst the members and societies of our profession, which allowed of a relief fund of considerable importance being established.

The Fraternal Aid has already had the satisfaction of being able in many circumstances to demonstrate its usefulness and to justify its creation, but its officers are of the opinion that its role will go on increasing with the progress of hostilities. They look forward above all to the day when, the war having at last come to an end, it will be possible to survey the situation as a whole and to examine all cases of distress calling for relief and the damage to be repaired.

17.—THE RE-EDUCATION OF DISCHARGED SOLDIERS.

The re-education of soldiers mutilated in the war has undergone considerable development in France.

Large centres have been founded in various districts, and Paris is one of those which have acquired the greatest importance.

The re-education of such soldiers has as its object the teaching of a new manual trade, or the re-training of the wounded men in their old profession, since their mutilated members prevent them from taking up their former occupations under the same conditions as previously.

The profession of dental mechanic, which does not compel a man to stand erect, and which can be fairly remunerative, is admirably suited to those who are mutilated in the lower limbs, and it was natural to

think of this profession when helping some unfortunates to recreate a situation in life for themselves.

The Dental College of Paris did not fail in this regard. The department of prosthetic dentistry lent itself without difficulty to this class of work.

A programme of theoretical and manual training was drawn up. It is so condensed that in ten months a mutilated soldier with a disposition for this kind of work, such disposition being clearly evident after a month's trial, can complete his apprenticeship as dental mechanic, and be in a way, even when he starts out, of earning at least three francs a day.

A philanthropic society, founded with this object in view, cares for the men's upkeep during their ten months of apprenticeship. On the other hand, the Ecole Dentaire of Paris, in addition to giving free teaching, provides all tools and raw materials required in the course of their training.

Funds have been voted for a group of twelve mutilated men.

Up to the time of writing four have been admitted after their aptitude for the work had been proved, and they are now in the midst of their apprenticeship.

18.—THE WORK OF THE CANADIAN HOSPITAL.

Far from being decried or ignored, the help of the French dentists is now sought after by the heads of the medical service.

Since the decrees of 3rd and 4th March, 1916, creating corps of dental surgeons for the army and the navy, these technicians are being utilized in all branches of the army, as much for the care of the teeth as for wounds in the face.

The fact is, however, that as the result of an error which lasted for a long time and which has not yet entirely disappeared, people insisted on supposing that the help of the dentist in maxillo-facial prosthesis must, and could in fact, only be introduced late in the case.

In spite of our classical works, and all our observations on this subject, the intimate collaboration between the surgeon and the technician, as early in the case as possible, was denied or ignored, the result being that the wounded who were looked after by the Relief Committees had in the majority of cases received their wounds a long time before, and had scars, or bony consolidations more or less vicious, or myopathic constrictions of the jaw dating from far back, which, unfortunately, greatly complicated the dentist's task, and rendered his role a much longer and a much more difficult one than it otherwise would have been.

After 18 months of experience a few voices of great authority, and notably that of M. Sébilleau, professor of the Faculty of Medicine of Paris, and head of the department of maxillo-facial surgery of the Lariboisière Hospital, in Paris, at last publicly recognized the indispensability of the immediate intervention of the dentist, as soon as the wounded and mutilated man is brought to the base hospital, or even before his removal from the field ambulance, in certain special instances.

Our distinguished colleague, Dr. Pont, head of the Dental College of Lyon, and chief of service of the maxillo-facial prostheses in Lyon, has even designed an appliance of a very simple character, based on the principles of the Angle apparatus, for the immediate fixing of the parts in any fractures of the jaw.

Since the very start of his service at Lyon in December, 1914, Dr. Pont has always co-ordinated the work of the surgeon with that of the dentist, and he is exceedingly satisfied with the results achieved. The same thing happened in Bordeaux under the direction of Professor Cavalié, head of the Dental College of Bordeaux.

But what is but simple truth in the provinces, is frequently, and for a long time, regarded as an error in Paris!

At last, no doubt, the scales fell from the eyes of those directing our activities, for the help of the Ecole Dentaire of Paris was asked for in connection with the Canadian Hospital recently installed at the racecourse of St. Cloud, at the very gates of Paris, where only recently wounded men are taken in.

We are at last permitted, therefore, to carry out our ministrations in a normal manner, and to apply our methods logically, that is to say, to proceed in a forward direction with our maxillo-facial restorations. It is now possible to begin by fixing in the correct position all fractured bony parts, before the mucous membrane and the skin have healed, whereas formerly we were frequently obliged to re-open such prematurely-healed wounds, thus proceeding in a backward direction, involving also some very laborious work in bone-setting, the results of which were too often deplorably far from our aesthetic ideal.

No more cases of pseudarthrosis for such wounded men, the nightmare of the surgeons.

We are safe in saying that our satisfaction at being put into touch with the administration of the medical staff of the Canadian Hospital was only equalled by our eagerness to get the work under way. The excellent relations, both of a friendly and professional character, which have always existed between our Canadian confreres and ourselves go far to explain our pleasure and emotion at being called on to help at St. Cloud.

Our emotion had its counterpart in the very friendly welcome accorded to us by the whole of the hospital staff, and in particular by Dr. Roy, head of the department of maxillo-facial surgery in this important institution.

Between 27th June, 1916 (the date of the foundation of our branch there), and 26th July, 1916, the following operations have been carried out at the Canadian Hospital at St. Cloud:

Consultations	22
Interventions	423
Appliances	12

Wounded.

- 3 Fractures of the upper jaw.
- 12 fractures of the lower jaw (simple).
- 5 fractures of the lower jaw (compound).
- 1 retraction of scars.
- 1 case of dental malady.

—
22
= =*Appliances.*

- 6 for reduction.
- 2 for keeping reduced.
- 3 for combined reduction and keeping reduced.
- 1 for retraction of scars.

—
12
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19.—THE SCIENTIFIC PROPAGANDA.

For the past twenty-five months, during which this war has already been going on, the medical corps have found themselves confronted not only by the most terrible wounds and the gravest of maladies, which usually characterize such dramas of human extermination, but also by very serious disorders as yet not well defined in their nature, and often fatal, caused by the abominable methods and practices of the enemy.

In spite of their rather rudimentary organization at the beginning of the war, the doctors, whose talent and knowledge leave nothing to be desired, handled all these complicated situations in a masterly manner, although many of them were entirely unforeseen.

There have resulted from such a state of affairs numerous medical discoveries and many new operative methods, which have been the subject of lectures and articles in the medical and surgical societies, as well as in the different academies, the scientific papers, and even the great dailies.

In the same way, starting out from nothing at all, along a new path bristling with difficulties, the dentists, by their individual or collective initiative, by their professional knowledge, their faith in their own methods, and by their indefatigable enthusiasm for the work of affording relief from suffering to the defenders of the Patrie, have succeeded in creating a very important work, greater even than they had foreseen, on account of the trench warfare, in which wounds in the head are so numerous that the number of hospitals for treating such wounds alone has attained an extraordinarily high figure.

To the classical list of wounds considered in a normal course of study, based on previous wars, of shorter duration as well as less deadly and involving smaller numbers than the present conflict, have been added new and original cases, resulting from the greater number and greater complexity of the causes, due to the abundance and power of the present-day engines of war.

All these cases, after a careful analysis of each one, have been classified into groups, and minute observations have resulted in the establishing of

certain methods of treatment in connection with which the different military dental centres are in agreement on almost all points.

It must be noted in passing, however, that a few differences of opinion still exist on certain questions.

On the other hand, there is no doubt that the publication of individual results throughout the country ultimately makes for a progress and a development in which they all share, and which it is an excellent, and, indeed, necessary thing to put within the reach of all practitioners.

With this object in view, the organ of the Ecole Dentaire of Paris, the "Odontologie," recommenced its publication in December, 1914, and ever since that date has lent its columns to the publication of all such works sent in.

Once this need for publication in print had been satisfied, the matter itself making stiff reading sometimes, but being always interesting, the need for proper verbal discussion was felt with greater and greater intensity as the work of the military dentists developed.

Exchanges of opinion and verbal discussion, asked for on all sides, became so necessary that the "Société d'Odontologie," of Paris, began its meetings again on the 15th of November, 1915, and has held them regularly ever since.

The first meeting of our Society was not very largely attended, as the notices had reached only its members and military dentists attached to the entrenched camp of Paris.

But, practically at once, the publication of the papers and discussions at our first meeting, which concerned the work at our own military centres of Paris, met with the greatest success, and showed clearly the need for the discussion becoming general all over the country, in order to clear up certain matters, as well as to accentuate and accelerate the already considerable progress which had been made during the first fifteen months of war. Accordingly, from the second meeting onwards, the centres of Lyon, Bordeaux, Amiens, Toulouse, Caen, Rouen, etc., represented by Drs. Pont, Cavalié, Blot, Sauvez, Lemerle, etc., came to add their important contributions to those of the various branches of the entrenched camp of Paris, in connection with which we find such distinguished names as Drs. Frey, Roy, Martinier, Villain, Ruppé, Robin, etc.

The debate even went beyond the ordinary limits, when Dr. Sébilleau, Professor in the Faculty of Medicine of Paris, and head of the department of surgery and maxillo-facial prosthesis of the Lariboisière Hospital, came and in a masterly address gave us the results of his observations since the beginning of the war, affirming, with the weight of all his great authority, the absolute necessity for constant and intimate collaboration between surgeon and practical dentist in the treatment of cases of facial restorations.

20.—THE INTER-ALLY DENTAL CONGRESS FOR NOVEMBER, 1916.

In the month of June last, the annual meeting of the British Dental Association took place in London, and the organizers of the meeting devoted the whole time to a consideration of the questions arising from the surgical and prosthetic treatment of wounds in the jaw and face.

The Ecole Dentaire of Paris was there represented by Dr. G. Villain, who, whilst giving voice in his report to his admiration for the personal work of many of his English confrères, expressed his regret at not having seen any attempt at development of some general theories which might throw light on certain questions still in the region of controversy, and which would thus be a guide to the practitioner engaged in the extremely complicated work of facial restoration.

In accord with several English confrères who shared his point of view, Dr. G. Villain proposed to the "Société d'Odontologie," of Paris the organization of an Inter-Ally Dental Congress, to be held in Paris in the autumn of 1916. The Société approved of his proposal.

Thus we shall have in Paris, from the 10th to the 13th November next, a dental congress specially devoted to the study of wounds in the jaw and face; to the discussion of prosthesis and military dentistry, and to the consideration of the most suitable organization for the army dental service both during and after the war.

Amongst the members of the Committee of Patrons we find the following names: The Minister of War, the Minister of the Admiralty, and the Ambassadors or Consuls of the Allied Powers. In addition, the Congress will have as Honorary President, Mr. Justin Godart, Under-Secretary of State of the Army Medical Service.

This Congress will have no asides of any kind, such as banquets, amusements or excursions. It will be solely and entirely a congress for study, which, after all, is the only kind compatible with a state of war.

Putting into practice the watchword of the Allies, "United action on a united front," which implies this other, "Unity of action placed at the service of all the Allies," that is to say, with regard to big guns, munitions, inventions, improvements, special processes, etc., the Inter-Ally Dental Congress will have as its main objective to centralize all our science and knowledge, which are at present too widely scattered, so as to enable the whole body to benefit by the experience of individuals.

The Congress will not spend time on the consideration of processes only calculated to bring certain personalities into prominence. It will rather endeavor to bring out general principles and methods tending to simplify and popularize our science, so as to offer a sure guide to all those employed in the curing and restoring of men wounded in the jaw and face.

21.—THE COMBATANT DENTISTS.

The help of the French dentists towards the relief of sickness in the war is extremely great.

We have tried to place it on record as briefly as possible.

But all the dentists who were mobilized are not thus employed. As there was no law before the war allocating them to particular duties, many of them were numbered in the ranks of the combatants or the stretcher-bearers at the front. They have bravely done their duty there, and in all ranks, from private soldier to captain, they are numbered amongst the heroes whose names have figured on some glorious honor list.

We have not yet sufficient information to allow of the publication of the complete list of those who have distinguished themselves by their gallant and courageous conduct; nor are we yet in possession of all the names of those of our number who have been wounded or have died in the service of the Patrie. But, incomplete as it certainly is, we already have a Roll of Honor hung in the office of the Ecole Dentaire. We are proud of our heroic confrères whose devotion is thus recorded, and whose names will remain forever engraved in our professional records.

22.—GENERAL SURVEY OF THE PRESENT SITUATION.

During this war, in which all possible crimes are being perpetrated by the Germanic Empires, the sum total of the work done by the French dentists stands out as a work both considerable and remarkable, of which they have every right to be proud.

To-day, their usefulness as specialists in the army is a proved fact.

At the present moment, a score of centres of maxillo-facial prosthesis, and thirty such for the care of those who are disqualified from active service through the condition of their teeth, are in full activity in the zone of the interior, and numerous similar formations are being organized or are already active in the zone of the armies.

If the work is still far from being as widespread as the dentists wish it to be, and conceive it as being one day, bearing in mind the huge numbers of men whom such work affects, it continues nevertheless to impose itself more and more each day and to develop under the compelling force of service rendered. Its expansion is coming about gradually, like all other work which is directed from a central administration.

It is the knowledge and skill acquired beforehand in the Dental Colleges, in dentistry, in prosthesis, in orthodonty, and in general physiology, which have made it possible for the dentists to arrive at results which are at this moment the admiration of the authorities and of the public, and which have earned the touching gratitude of the sick and wounded.

It is thanks to this science of restorative prosthesis, so characteristically French, practised first by Delalain, Preterre, etc., and more recently by the

methods and processes of the immortal Claude Martin of Lyon, the teaching of which has been maintained as a tradition in the dental colleges of France, that the dentists were enabled to be of such great assistance in cases of facial mutilation resulting from the present general conflict.

Their personal satisfaction can well be understood, engendered as it is by a sense of duty accomplished.

It is in this way, then, that the multiple and complex machinery which makes up the present-day armies is created or brought to a state of perfection, according to the needs or surrounding circumstances, and is at the present time in a state to satisfy the most exacting claims.

In the ranks of all the Allies the springs of action are set.

It is marvellous to think that all these changes have been brought about literally while feeling the pressure and encountering the fire of the enemy. However that may be, the fact is that, thanks to this reaction, as intelligent as it is energetic, we can affirm without hesitation at the beginning of this third year of war, that the general situation has indeed changed, and is the cause now of as many hopes to the Allies as it is of pessimistic thoughts to our enemies. The latter, indeed, are already showing a certain uneasiness, if not yet remorse, at the thought of the punishment which is approaching.

The old roles are now reversed. For a long time the Allies, badly prepared for this gigantic contest, were obliged to face the overwhelming tide and to be content with resisting it. But the hour of reaction has come, and the powerful and ever-increasing waves of the Allies are now bursting against the weakened defences of Germanism and are preparing the way, slowly but surely, for that peace to be imposed by the Allies, which, as Monsieur Aristide Briand has well said, can be conceived only in victory and through victory.

THE CANADIAN ARMY DENTAL CORPS FROM A CIVILIAN STANDPOINT

MARK G. McELHINNEY, D.D.S., L.D.S., Ottawa, Ont.

Read before the Eastern Ontario Dental Association, June, 1916.

The military side of the Canadian Army Dental Corps has been eloquently and adequately presented by Major Clayton at meetings of dental societies from coast to coast, and will be again presented at this meeting.

I have been asked to present the subject from another point of view and ask Major Clayton's indulgence, if, in the nature of the case, his domain is unavoidably touched upon.

Apart from the acknowledged inestimable value of the services of the dental corps to our army there are many advantages which must accrue to the dental profession in particular and to the public in general.

To the profession it means an improvement in status to be ultimately equal to that of the medical corps. The time required to accomplish this happy objective will depend entirely upon the service rendered by the corps and upon the interest and assistance afforded and the dignity accorded to the corps by the civilian members of the profession.

As to the part played by the corps I think that it will be accepted by all that in point of service everything has been highly creditable in as far as it has been permitted to exercise its functions. If in any circumstance the maximum service has not been rendered, the fault lies with outside influences and not with the dental corps.

We, who have given the subject much thought and who are so thoroughly conversant with its prime importance, are prone to become somewhat impatient when we see that some other people are slow in according recognition and appreciation.

We forget that a new institution has to face many peculiar and annoying difficulties. We forget, also, that the army is a very old institution, and a very conservative one with great possible efficiency but hampered by much tradition, honorable custom and inconceivable red-tape. While these conditions at times bear heavily we must not forget that military efficiency depends upon discipline and esprit de corps. To attain this end democracy must be tempered with a certain despotism.

A democratic army, lacking the governing influence of rank and authority to produce intelligent and concerted action, would soon degenerate into an helpless rabble, a prey to the first foe with a superior organization. Progressive reform in any institution must be carefully accomplished without dislocation of the basis of organization for such would bring about a period of weakness and that, perhaps, at an inopportune moment.

The conservatism of the military organization is the element which protects it from such dislocation and consequent weakness.

In spite of these considerations to which we are endeavoring to accord full value, there must come a time when innovation and reform are imperative, a time when even the army must approximate civil progress or become obsolete. The mule had to give way to the motor, the snider to the magazine rifle and the machine-gun, massed formations to open formations and cavalry is futile in entrenched warfare.

A notable example of military reform with greatly increased efficiency is that of uniforms. The British army in India was forced to adopt clothing suitable to peculiar conditions, but previous to the Spanish-American war most of the world's armies were encased in grotesque and spectacular combinations of stiff cloth, heavy braid and brass hardware topped off with wonderful and unmanageable headgear, the whole very effective on parade but damnably inconvenient in action. The democratic American discarded the barbaric show and adopted as a basis a soft shirt, a pair of pants that would bend and a slouch hat. A man thus dressed is better than two men in strait-jackets. To-day, the soldiers in most armies can bend without breaking. This reform is directly traceable to citizen-soldiery whose traditions did not compel them to attempt to play foot-ball in a dress-suit. It is a sad but true commentary on human pride that when Sir John Franklin made his ill-fated Arctic Expedition in the Erebus and Terror, ships' companies were clad in the fine uniforms of the British navy of that time, blue broadcloth and gold braid. The ships were lost and the men frozen to death. McClintock found a boat load, spic and span but dead, a tragedy of grand but futile heroism. Modern Arctic Expeditions are Klondyke in their arrangements and generally return little the worse for wear.

As in strictly military and naval affairs the useful accessory units are undergoing marked changes, the medical service has undergone much change and improvement and now we are asking why ten per cent. of a fighting force should be ineffective through dental lesions, and the dental corps is the answer.

Here is where the civilian end of the profession comes in. The officers of any corps are subject to strict military etiquette, custom and red-tape. Suggestions from them are not usually welcome to the enthroned inertia of those higher up. Everyone's corns must be carefully respected. Pressure, if necessary, must come from without, never from within. From time immemorial the military authorities have considered themselves our masters, and old ideas are difficult of removal. The heresy that we, the people, who pay the bills, are entitled to a voice is of recent growth and not always recognized.

It is incumbent upon the civilian dentists of Canada, as contributing citizens and as specialists in their own department who know whereof they

speaking, to impress upon the military authorities that the intelligent people of Canada are supporting a considerable army in the field and demand that that army shall be kept at the highest point of efficiency consistent with the means provided.

While we have every confidence in the military authorities in the conduct of their various departments and in the medical corps in the conduct of its department, and would not presume to offer advice thereon, we are assured that in the matter of dental service, the dentists of Canada are the best and the only men capable of carrying that service to its maximum efficiency, subject only to the exigencies of warfare as directed by the general staff to which in the nature of things all corps must be subservient.

We are providing and paying for dental service for our men and claim the right to a dental establishment under a dental director-general, subject only to headquarters, and free from molestation or interference on the part of any other sister corps, medical or otherwise.

In the early history of our profession we were refused recognition by the medical profession as a department of their art. They refused us educational facilities at their colleges and a seat at their boards. They elected specialists in the eye, ear, nose, throat and nearly every other portion of the human anatomy, even the protologist and the surgeon of the humble corn were given a place, but the dental surgeon, not at all. With a line as rigid as that dividing the castes of India the hemorrhoid was declared a Brahmin, and the carious tooth a pariah in surgery, and so we took up the then thankless task of fathering the pariah.

We established our own colleges, bred our own teachers and investigators, fought for our own legislation, bore our obliquity in patience and achieved our own professional status with thanks to none outside of ourselves. We control some of the finest colleges in the world, we have placed a new limit in preventive medicine, we discovered and first applied anæsthetics, we made original advances in bacteriology, we have increased the efficiency of the pupils in the public schools and made life happier for thousands of the poor. We have taught cleanliness and enhanced self-respect for the children of the land, and what is of most immediate value, we have enabled more men to enter the army than has any other influence save patriotism. We can reduce a ten per cent. handicap on our effective fighting force to three per cent. or less, and have already done somewhat toward that reduction.

In view of these attainments, unparalleled, in point of time, by any other profession we are entitled to a considerate hearing on the part of the military authorities. We have received appreciative consideration on the part of the Hon. the Minister of Militia and Defence whose intention was evident to accord us full recognition. We regret to say that the intention of the Hon. Minister has not been carried out and recognition is delayed. We know that this delay is directly due to unwarrantable interference on the

part of certain officers, chiefly members of the medical corps who evidently considered our recognition an intrusion upon their dignity and prerogatives. While we, personally and as a profession, have the highest regard for the medical profession as a whole, we resent strongly the retrogressive action of certain of its members and shall forego no honorable means to bring them to a sense of justice with regard to our claims. It is incumbent upon the civil members of the dental profession to bring this about, and the best means for its attainment provide a fit subject for your discussion at this meeting.

While I should hesitate to bring political considerations into this discussion, I am unavoidably led to the conclusion that the Hon. Minister is not aware of the extent to which his intentions have been thwarted, and that advantage has been taken of the attempt, I would almost say conspiracy, to discredit the Hon. Minister and through him the administration of which he is a part. In times like these when a strong and untrammelled hand is most needed at the head of our military affairs, I regard this attempt on the part of some whose party rancour overtops their patriotism as little better than treason.

I have said and written little on the matter of patriotism, believing fully that those of British blood, like myself, need no spur to duty. Like most of you I have felt the prick of conscience on seeing the man in uniform, and would have insisted more strongly on a place in the dental corps had I not been told that some of us were needed in our civilian capacity. I have taken this hint as a recognition of my small service to my profession and feel it my duty to make good. The responsibility of the civil members of our profession must be brought home to each one of us. Those of us who remain at home must see that those of our profession who go to the front receive full recognition, and are thereby enabled to render the best possible service to our army.

The success of our dental corps means stupendous benefits to the corps itself, to the army, to our profession and to the public at large. To the corps it will give the dignity of complete establishment; to the soldier, freedom from dental misery; to the profession, wider recognition while every man who returns to civil life will become a living exponent of dental care and oral hygiene. Gentlemen, are these matters not worthy of your consideration?

WORK OF THE CANADIAN ARMY DENTAL CORPS

CAPTAIN W. W. WRIGHT, M.D. 10.

Read before the Dental Society of Western Canada, Regina, June, 1916.

Mr. President and Members:

I am pleased to be with you to-day for many reasons, I know many of you personally and I feel as at home among friends. Since the last meeting of this society many historic things have happened. War is upon us. War in all its ghastly forms. It is quite likely that every dentist here is represented in the Army by several relatives, and the nightmare is ever on our minds. Yet the fortitude of our people in their voluntary fight for right is wonderful. Our beloved profession has been recognized as never before in this country by the formation of a Dental Corps, independent and substantive rank accorded its members. I do not mean that everything to be desired has been accorded us. There are some things yet to be desired; some regulations and establishments yet to be improved on. To the civilian it would appear to be a simple matter to get the recognition and rights due us, but to any man of military experience, not so. He knows that any new organization or corps in the army must win its spurs; must continually fight for its rights and it is usually years before they get them. In this connection I am informed that it is only recently, after eighteen years of work, that the Dental Corps in the United States Army has accorded the dentists the privilege of reaching the rank of "Major." They have been paid fairly well but not recognized in rank to the extent they are in the Canadian Army Dental Corps.

However, gentlemen, I do not believe this to be the day or the hour to refuse our services to our country, because we do not receive the recognition in pay and rank that we think we should. I have a great admiration for men of prominence, as two or three M.P's., who have enlisted as privates in His Majesty's Forces. They are men who let conscience and duty rule their actions rather than pride and selfishness. The response for dentists in M.D. 10 has been equal to the demand, but the time has about arrived when more experienced dentists will be wanted, and I believe they will respond to the need.

A short history of the work of the Corps in this district might be of interest to you.

It was just about a year ago that the organization of the Dental Corps was authorized; and while touching on this point let me pause to say that two of the best friends the Dental Corps has had and still have are Major General Sir Sam Hughes, and Brig.-General John Hughes. Lieut. (now Captain) J. F. Morrison was the first officer to do operations in Camp in this district, and he had a great deal of the pioneer work on his hands. He was later joined by Lieut. E. J. Kelly, of Brandon, Lieut. G. H. Bray, of Morden, and Lieut. T. W. Caldwell, of Yorkton. These four

officers were on duty when your humble servant was appointed to succeed Lieut. Morrison, who, with Lieutenants Bray and Kelly, proceeded overseas on December 13th, 1915. Two more dentists proceeded overseas April 3rd, and one since from M.D. 10 to Valcartier; there are now nineteen on duty at Camp Hughes, two at Winnipeg, and four more to report on duty shortly. The names of dentists from M.D. 10, who are already on duty in the C. A. D. C. both here and overseas, are: Captains J. F. Blair, A. A. Garfat, W. H. Gilroy, E. J. Kelly, G. H. Bray, J. F. Morrison, C. H. Moore, D. P. Stretton, W. W. Wright; Lieutenants H. C. Jeffrey, J. A. Stewart, L. D. Steele, G. A. Munroe, W. S. Holmes, N. S. Bailey, J. G. O'Neill, W. H. Reid, B. S. Bailey, D. A. P. MacKay, R. J. Allison, A. R. Hurst, B. E. Brownlee, A. W. Myles, M.P.P., F. G. Moore, R. S. Rose, R. J. Yeo, J. M. Rogers, H. V. Schwalm, A. V. Sinclair and M. A. McLaren.

The object of the Government in establishing the C. A. D. C. was to provide a means whereby the soldiers might have their teeth and jaws cared for, and a means whereby men otherwise physically fit, but who were being rejected (according to regulations then in existence) on account of the conditions of their organs of mastication, might enlist. The luxuries in dental service must give place to necessities and utility must be the aim. The greatest good to the greatest number has always to be considered.

The work of the C. A. D. C. is both preventive and reparative, and includes amalgam fillings, cement fillings, gutta percha fillings, devitalization, treatment and prophylaxis, full and partial dentures, extracting, fractures, abscesses, etc. All this work is done absolutely without cost and while some of the work is necessarily not of as lasting a nature as one might wish yet it is expected to be sufficiently so as to necessitate no expense on a soldier's part during the War.

The following tables will give you the official figures of the most important parts of our work during the first quarter of this year, January, February and March:

Work.	Jan.	Feb.	Mar.	Total.
*Amalgam	1324	1771	1910	5005
*Gutta Percha	137	87	73	297
*Cement	439	396	658	1493
*Root Filling	428	424	351	1203
Pulp Cap.	31	52	61	144
Devitalizing	316	338	611	1265
†Part Upper	83	163	242	488
†Part Lower	48	80	89	217
†Repairs	67	70	63	200
Prophylaxis	93	152	302	547
Extracting	2632	2943	3264	8839
Completed Work	1511	2006	2066	5583

Operations	6119	7422	8774	22315
‡Examinations		296	827	1123
§No. of Operators	9	13	17	39
General Anaesthetics			11	11

* Total Fillings, 7998.

† Total Dentures, 905.

‡ Record of Examinations was not kept prior to February, 1916.

§ This figure does not include the whole of the 45th Battalion.

The work done during the month of May, when some of the outside points were not so rushed as usual on account of seeding leave, was as follows:

*Amalgam	2028
*Gutta Percha	108
*Cement	877
*Root	384
Pulp Cap.	118
Devitalizing	385
†Part Upper	198
†Part Lower	128
†Repairs	55
Prophylaxis	261
Extracting	2837
Completed Work	1051
Operations	18495
Examinations	444
No. of Operators	16
General Anaesthetics	2

* Total Fillings, 3397.

† Total Dentures, 381.

A report from Lt.-Col. Armstrong of work done overseas has already been published in our Canadian Dental Journals and when the figures are added up they are simply stupendous.

From what has been said already you may imagine that everything has been smooth sailing for the Dental Corps. Not so. The difficulties in our way at times were such that it seemed that we would not be able to stand on our feet; and I am informed that had it not been for the staunch friend of the Corps, Major-General Sir Sam Hughes, we would not have been able to retain our "status quo." However, thanks to our friends, and re-organization, and more than all to the real merit of our work, we are fast becoming settled on firm foundations.

I would like to take this opportunity of expressing an appreciation of the work done by all the heads of the C. A. D. C., Lt.-Col. Armstrong, Major A. A. Smith, Major Gibson, and especially of our present acting Director General Dental Services at Ottawa, Major W. B. Clayton; since I am more familiar personally with the excellent work he has been doing in our behalf.

The question of supplies has been one of our greatest difficulties, and more than once have all supplies been stopped and work ceased for a few days in one or two places. That difficulty is past now as far as our own particular necessities are concerned. But there has been a difficulty in getting some kinds of supplies and recently an organization was formed in Winnipeg to help us get these things and some comforts for the men as well. Nearly every Battalion has a Ladies' Auxiliary, who make it their business to assist that particular battalion to receive things not provided for by the Government. The idea found a happy reception with the lady friends of the dentists and the other members of the C. A. D. C., and the Dental Corps Ladies' Auxiliary came into existence about the 1st of May.

Their object is to supply necessities and comforts not otherwise provided for the C. A. D. C. at home and abroad. They have already supplied us with 300 towels, 100 operating coats, 20 work aprons, 44 operating table covers, 129 dusters and 3 laundry bags. I am informed they would be pleased to give information to any ladies interested and to receive assistance. Mrs. H. R. Ringer is President, and Mrs. A. D. Anderson, Secretary-Treasurer, both of Winnipeg. From the Red Cross we have received 400 towels, 10 surgical coats and two packages of wipes.

I have spoken thus far on the work of the C. A. D. C. in the past and during the present. How about the future? Hundreds, yes thousands of men will be a care on the state for the rest of their lives after this war is over. They will be a care on the state during the rest of our lives and part of the establishment that Major Clayton is arranging at Ottawa, provides for a permanent Dental Corps. It may be, it likely will be because of the need there will be, that some of the present members will make it a life work. This war has started not only a C. A. D. C. for war, but for peace, and no doubt it will be necessary for dental organizations to make representations for the betterment of the original legislation.

In conclusion I wish to state that the Dental Corps is proving itself the most valuable recruiting agency at the present time. Ten per cent. of the men now enlisting could not do so were it not for the C.A.D.C. This is exemplified in an examination of 486 men of a battalion recently examined. Of these 486 men, 54 were men who could not have enlisted previous to the time that the Government removed the restrictions regarding mastication, and ordered all men, otherwise physically fit, to be accepted and then sent to the Dental Corps to be made dentally fit. This, I believe, gentlemen, was one of the greatest compliments that could be paid to our profession.

The Dental Corps will be needing more dentists, and we want the best dentists we can get. The best is none too good for the men that step into the firing line and risk their lives for the great principles we are all striving for.

DR PARKIN, Regina.—“Captain Wright, I would like to ask if it is

not treading on dangerous ground to cap pulps, on account of the climatic conditions in the trenches?"

CAPTAIN WRIGHT.—"As to the matter of capping pulps, I may say there is probably a little misunderstanding. We do not make a practice of it at all, but we do often place a protective coat or capping over nearly exposed pulps."

No other questions were asked, and Captain Wright closed his address with the following:

"Regarding pay received, it is just about two weeks ago that we were granted the separation allowance. Up to that time we had been refused. Recently we got the decision that married members of the C.A.D.C. would receive separation allowance from date of enlistment. Pay in camp is \$2.60. If you are home it is \$2.60 and \$1.50 subsistence, that is, \$4.10 a day. When you are overseas you get rank of Captain. Overseas you get \$3.75 per day plus a separation allowance to married men, so total pay overseas then is \$4.75 per day for married officers.

"There is one more thing, if this organization has any literature they could let us have to put in the waiting-room which the soldiers could carry away with them, it would be very useful to them, also to the general public. It should be literature regarding the care of the teeth."

Dental Societies

REPORTS OF COMMITTEES, CANADIAN DENTAL ASSOCIATION, MONTREAL, 1916

REPORT OF NOMINATING COMMITTEE.

Your committee respectfully submit the following names:

Hon. President—Dr. W. F. Barbour.

President—Dr. Jos. Nolin.

First Vice-President—Dr. Frank Woodbury.

Secretary-Treasurer—Dr. Sidney Bradley, 206 Laurier Ave., Ottawa.

The Second Vice-President is to be appointed by the Local Committee in the place of our next meeting.

Representatives from the provinces:

Prince Edward Island—Dr. Smallwood, Charlottetown.

Nova Scotia—Dr. Frank Woodbury.

New Brunswick—Dr. H. S. Thomson.

Quebec—Dr. Jos. Nolin.

Ontario—Dr. Bradley, Ottawa.

Manitoba—Dr. Douglas Brown, Winnipeg.

British Columbia—Dr. R. Ford Verrinder, Victoria.

Saskatchewan—Dr. Sylvester Moyer, Rose Town.

Alberta—Dr. J. W. Clay, Calgary.

REPORT OF THE INTERNATIONAL MILLER MEMORIAL FUND.

Toronto, Sept. 13, 1916.

To the Members of the Canadian Dental Association, Montreal, Que.:

Gentlemen,—At the last meeting of the Canadian Dental Association, held in Winnipeg, 1914, the statement of the International Miller Memorial Fund showed a balance of \$1,150.99. The Executive of the Miller Memorial Fund here were ordered to send to the Treasurer of the International Miller Memorial Fund the money which had been collected for that purpose. Since the last meeting of the Canadian Dental Association, so many nations have become involved in a disastrous war, which still continues, that it has not been feasible to transmit the money as ordered. Therefore, the amount has remained in the bank, accumulating interest, which now amounts to the sum of \$1,239.71. Your committee suggest that no effort be made to forward the money until the war is over, and peace declared. In the meantime it might appeal to you as being wise, and patriotic, to invest what moneys we have in Dominion War Bonds. These would bear interest at 5½ per cent., instead of 3 per cent. bank interest as at present received. When the time comes to transfer the fund to the central body, it could be sent in the form of these war bonds, which would be an advantage

to our country, and also be a good form of security for the International Miller Memorial Fund to have.

All of which is respectfully submitted.

ROBERT J. READE, Chairman.

CHAS. G. SCOTT, Secretary.

WALLACE SECCOMBE, Treasurer.

REPORT OF COMMITTEE ON COL. CLAYTON'S ADDRESS.

The dental profession for many years has recognized the necessity of dental services to the soldiers, both in times of peace and in times of war. This Association, through its Army Dental Committee, presented its views to the Minister of Militia and Defence in 1904, and through its influence dentists were attached to the Army Medical Service. It was soon found that such services as could be rendered under such an arrangement were not satisfactory to the dental officers or the soldiers. Committees of this Association for several years annually laid the matter before the Militia Department without affecting any improvement in the arrangement.

When the war broke out the rejections of thousands of men for dental defects alone impressed the dental profession with its opportunity and duty. They realized that with a free hand they could readily make the men physically fit for service, and without any authority from the Government, dentists in all parts of the Dominion voluntarily undertook the work of making fit thousands of men already rejected.

Not only was the dental profession of Canada impressed by the fact, but to their great satisfaction they found that the Minister of Militia and Defence was also impressed in like degree of the needs of the service of dental surgeons in order that the Canadian army might be enabled to recruit in any degree commensurate with their promises. It was the Minister's view that not only were these men to be made fit, but he was vitally impressed with the necessity and importance of keeping them so. No person in Canada knows better than the Minister of Militia himself how quickly dental pain unfits a man for service in the trenches, where the soldier is exposed to cold, wet feet and exhaustion.

Under instructions from the Minister a separate organization designated as the C.A.D.C. was formed for the purpose of giving practical effect to his views. The work of this corps has been eminently satisfactory in both Canada and Great Britain, as is collected by the commanding officers, not only of battalions, but of every military district and camp, and, what is more important, by the soldiers themselves.

The same work in France has been disorganized and practically set at naught by influences which we deem it our duty to deprecate, as our good work in the interests of our gallant soldier boys has been minimized.

In view of the facts we are fully cognizant of, we deem it our duty to recommend the following members of our profession as a deputation representing the Canadian Dental Association, now in session, to wait upon the

Minister of Militia, with a view to having efficient and timely dental service rendered to our soldiers in the trenches.

A representative from each of the four Universities: Dalhousie, McGill, Laval and Toronto, and Dr. Harold Clark, of Toronto, and the President of this Association, with power to add to or take from as is deemed wise.

REPORT OF THE ARMY DENTAL FUND COMMITTEE.

Montreal, Sept. 13, 1916.

Mr. President and Gentlemen,—Although every member of the Canadian Dental Association must fully understand the purpose of the Canadian Army Dental Fund, a word from me as to its inception, its organization, and the work it has done, may be of interest to the members.

The Canadian Army Dental Corps is a new institution in our army, and, as might be expected, many officials high in authority and in the counsels of the army looked askance at the newcomer; questioned its value, and the wisdom of its creation. As a result it was soon discovered that it would be impossible to get the powers that governed in these matters to approve the outlay necessary for its proper equipment and maintenance. The Corps had not been long at work before its members were complaining of the lack of equipment and supplies, such as operating coats, laboratory coats, towels, wipes, and many other things indispensable for efficient service. Some of us who were in close touch with members of the C.A.D.C., and hearing these oft-repeated complaints, felt that something ought to be done to correct the unfortunate condition. It was important for the credit of the dental profession that the new A. D. C. should make good. It was thought that each member of the profession who was so situated that he could not enlist and do his share in the great struggle would be glad of an opportunity to contribute to a fund that would enable those who had enlisted from our profession to render efficient service with a minimum of discomfort to themselves and the maximum of credit to our profession, from which the new corps was recruited. It was put up to the officials of this Association, with the result that an organization was formed known as the Army Dental Fund Committee, with a central committee consisting of the following members: Drs. A. E. Webster, Wallace Secombe, Fred C. Husband, W. T. B. Amy, C. V. Snelgrove, C. A. Kennedy, R. W. Hull and Harold Clark. This committee was given powers to form sub-committees in the several provinces, and to appoint and instruct representatives in various districts concerning the collection of funds. It was felt that any reputable dentist who was not enlisted in the service of his country would be glad to contribute at least \$5 to help in the work of fitting men to fight for us who were staying at home.

A carefully-prepared circular was addressed to the profession, setting forth the objects of the fund and soliciting contributions to it. The members from the various provinces will be interested to learn the response. It is as follows:

Prince Edward Island ..	None	Manitoba	\$ 141.00
Nova Scotia	\$ 10.00	Saskatchewan	None
New Brunswick	206.00	Alberta	25.00
Quebec	807.00	British Columbia	58.50
Ontario	1,872.16		

The receipt of our circular brought forth from British Columbia and some of the Maritime provinces the complaint that unlicensed men had been accepted in the overseas corps, and were at work over there. Your committee took the matter up, and found that the complaint was quite well founded. As a result of our protest it is our pleasure to report that these men have been removed from the corps and returned.

Complaints came to us that Red Cross supplies were denied to the Army Dental Corps, while freely given to the Army Medical Corps. Your committee conferred with the administrative officers of the Red Cross Society in Toronto, Drs. McElhinney and Juvet interviewed the corresponding officials in Ottawa, with the result that we were assured that Red Cross supplies would, in future, be at the service of the A.D.C., and we immediately notified the O.C.'s of the corps in the various military districts. I regret to report that complaints have recently come to us that Red Cross supplies are still denied to us where they are freely given to the A.M.C. It may be necessary for us to ask the profession to divert their Red Cross contributions to the Army Dental Fund. The matter has again been put to the Red Cross officials, but too recently to have any response to report. The Treasurer's report will acquaint the members with the administration of the fund in every detail. I might explain that the item of \$1,500 voted to the O.C. of the overseas A.D.C. was to be spent where, in his judgment, it would be most needed for the efficiency of the corps. A report of his stewardship of this part of the fund will, no doubt, be forwarded in due course.

Before closing this report I wish to bear testimony to the splendid work done by our Secretary, Dr. A. E. Webster, and our Treasurer, Dr. C. V. Snelgrove. These offices, I know, entailed a lot of work upon them, and demanded much of their time.

Up to date, the A. D. Fund has done a good work, but its work is not finished, and the need of it will probably continue to the end of the war. The matter should receive the earnest consideration of the Association.

In tendering this report I beg to move its adoption, and with its acceptance the committee desires that its existence should cease.

(Signed) HAROLD CLARK, Chairman.

Toronto, Sept. 11, 1916.

TREASURER'S REPORT.

Mr. President and Gentlemen,—In submitting the Treasurer's report of the Army Dental Fund of the Canadian Dental Association, I am sorry I cannot give you a larger credit balance to go on with this good work.

I think you will all agree that we did well with the subscriptions we

had the pleasure of receiving. I have not prepared an itemized statement of the numerous accounts paid, but will give you the records of how we spent the money, and also will give you the amount of the subscriptions we received from each province:

Receipts.

Alberta—	
Calgary Dental Club	\$ 25.00
British Columbia—	
Ten subscriptions	58.50
Manitoba—	
Nineteen subscriptions	141.00
New Brunswick—	
Thirty-one subscriptions	206.00
Nova Scotia—	
One subscription	10.00
Prince Edward Island—	
None	
Quebec—	
Eighty-two subscriptions	807.00
Saskatchewan—	
None	
Ontario—	
One hundred and seventy-two subscriptions	1,553.67
Dental Corps Fund, c e Dr. C. A. Kennedy	259.84
Canadian Oral Prophylactic Association	100.00
Special subscription from Toronto Dental Society to Captain Mallory, Captain Mallory returned it to Society, they gave it to Army Dental Fund	48.65
Washington, U.S.A.—	
One subscription	10.00
Bank interest	11.01
Bank interest	7.24
Total	<u>\$3,237.91</u>

Messrs. Wickett & Smith, 135 sets of teeth.

There were subscriptions, towels, cheese cloth, coats, etc., given to Lieut.-Col. Armstrong by the Ottawa dentists.

Expenditures.

In care of Major A. A. Smith to Lieut.-Col. Armstrong to purchase dental requirements overseas	\$1,500.00
T. Eaton Co., first account	634.90
287 operating coats, 149 dozen towels, 287 yards cheese cloth.	860.50
Temple Pattison Co., sterilizers, anocain, etc.	60.70

Methodist Book Room	\$ 88.50
Stamps, sundries, etc.	37.57
	<hr/>
Total	\$3,182.17

Recapitulation.

Subscriptions, bank interest, etc.	\$3,237.91
Expenses, etc., to Sept. 11	3,182.17

Balance in Bank	\$ 55.74
Outstanding account, Temple Pattison Co., between \$44 and \$45.	

CHARLES V. SNELGROVE,

Treasurer Army Dental Fund.

Toronto, Sept. 11, 1916.

REPORT OF THE COMMITTEE ON "DENTAL SERVICES IN THE ARMY."

To the President and Members of the C. D. A.:

Gentlemen,—Your Committee on "Dental Services in the Army" beg to report that your instructions received at the last meeting of the C.D.A., with regard to the organization of the Dental Corps, have been followed as nearly as possible, with the result that considerable progress has been made, although an entirely satisfactory and workable establishment has not yet been authorized. Your resolution with regard to substantive rank for dental officers in the Army Dental Corps was again forwarded to the department, with the same result as in previous years. As you are aware, your committee for the eight years previous to the war, had brought this matter to the attention of the Militia Department at every opportunity, and were finally informed that the organization then existing was satisfactory in times of peace, and no doubt would be so in time of war. After the outbreak of war members of the dental profession in Canada, but particularly in Toronto, realized immediately the necessity of dental services for recruits, and thousands of men who could not have been accepted otherwise, were treated by civilian dental surgeons who volunteered their services, and their mouths placed in a healthy condition, so that they could be accepted by the military authorities and proceed overseas. The importance and value of this work impressed very much the Minister of Militia, whose attention was directed to it by Generals Fotheringham, Lessard and Logie, as well as by a sub-committee of this Association from Toronto. This Toronto sub-committee, consisting of Drs. Webster, Seccombe and Coulter, was agreeably surprised to discover on the first interview with the Minister that he was not only disposed to authorize substantive rank for dental officers, but believed that an entirely separate organization from that of the Medical Services was necessary. After obtaining the Minister's assurance that an organization similar to that of the Medical Services, to be organized and administered by a member of the dental profession, with the same respective rank for the

dental officers, would be authorized, the Toronto committee requested that a local Ottawa committee, consisting of Drs. Armstrong, Gibson and Greene be appointed, and consult further with the department re organization, etc. This local sub-committee was appointed by the chairman of your committee, and, as a result, Dr. (Capt.) J. A. Armstrong was appointed to organize and administer the new corps, and Divisional Order No. 162, authorizing the appointment of one dental officer with two assistants to each thousand men, was passed. Under this authority, as well as a militia order passed in May, 1915, thirty-five officers were appointed, with N.C.O.'s and men, to proceed overseas under the command of Lieut.-Col. Armstrong. This draft left Canada in June, 1915, and has since been supplemented by other drafts, which makes the total number of C.A.D.C. officers overseas seventy-eight at the present time. By this time it was realized that a home service branch was even more necessary and important than the overseas. In November, 1915, appointments were made, in each military district, of divisional and other offices in proportion of one to each battalion. It is hardly necessary to mention in this report the difficulties met with by Col. Armstrong and Major Smith in the organization of the overseas drafts, and of Major Clayton in the organization of the home service branch, but great credit is due them for the manner in which these difficulties were met and overcome, both overseas and at home, and although some dissatisfaction still exists with regard to the rank of dental officers as compared with that of officers in other corps, the committee feels that this association and the dental profession generally is to be congratulated on the success which has already been obtained. Even with the organization as it exists at present, it is estimated that the C.A.D.C. is responsible for placing ten per cent. of the Canadian and British troops at the front who would not otherwise be there. One reason that our proper status has not been attained is that members of the Militia Council do not yet appreciate, as the Minister does, the vast importance of the dental services to the army, and, with a view of educating them and the public generally in regard to this, it is recommended that a committee of this Association be appointed to conduct a platform and newspaper publicity campaign, and that General Officers Commanding, as well as Brigade and Battalion Commanders, be advised of the importance of the dental services. It is also recommended that this Association suggest to the Militia Department that the so-called clinics conducted by the C.A. D.C. be termed surgeries.

Respectfully submitted,

GEO. K. THOMSON, Chairman.

JAS. M. MAGEE.

Dominion Dental Journal

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All Communications relating to the Business Department of the Journal
should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

Vol. XXVIII.

TORONTO, OCTOBER 15, 1916.

No. 10.

DATA FOR HISTORY OF C. A. D. C.

This issue of the JOURNAL is given up mainly to the discussion of dental military matters in France, Great Britain and Canada. The leading article is by Dr. d'Argent, an official representative of the French Government, who attended the recent meeting of the Canadian Dental Association. The other papers are by noted Canadian authors, and reports of committees in connection with the meeting in Montreal.

It is desirable that some effort be made to record the facts leading up to the establishment of the C.A.D.C., and the work done by it during the period of the war. To further this end we publish everything we can get which will throw light upon the part that dentistry is playing during these times. This issue contains a great deal of information, many criticisms, and proposals for the future. While the French Government was slow to establish an independent corps, it has at the present time gone far beyond anything either proposed or carried out by the C.A.D.C.

In the report of the Army Dental Committee, Major Thompson, its Chairman, suggested that there should be a campaign of publicity, so that

the public might become acquainted with the work done by the C.A.D.C., and in this manner get the attention of the military authorities to make still greater advances in this important service. Since the meeting, Major Thompson has undertaken to prepare articles for publication in the newspapers in District No. 5. Out of this has grown the suggestion that every military district should undertake preparation of all the facts concerning dentistry in the army previous to the establishment of the C.A.D.C., and since that time, together with suitable illustrations of the equipment, dental surgery, officers and camp. When the war is over all this separate data should be gathered together and published in some permanent form, so that it may be a basis at some future time for the publication of a complete history of the relation of the dental profession and dentistry to the Canadian army, both at home and overseas. It was suggested by Dr. A. W. Thornton, Montreal, about two years ago, that the C.A.D.C. appoint a dental historian or dental recorder; it seems too bad that this suggestion was not carried out.

The dentists of to-day do not fully appreciate the great value to the profession and to the country that the C.A.D.C. is rendering. Their services will be very much more appreciated after many years have elapsed. Nor do the profession or the public appreciate the great service of Sir Sam Hughes, under whose immediate direction the C.A.D.C. was established in the face of opposition from the Deputy Minister to the tail end of the Medical Service.



Editorial Notes

The Royal College of Dental Surgeons re-opened October 10th.



Colonel Clayton, Ottawa, was in Toronto a few days ago and addressed the students of the Royal College of Dental Surgeons.



Mrs. T. Armstrong, mother of Lt.-Col. Armstrong, C.A.D.C., England, and Dr. R. Milton Armstrong, Ottawa, died September 27, 1916.



Dr. J. Leslie Wright, Calgary, Alta., who has been Dental Inspector in the public schools ever since its inauguration, has resigned and intends to devote his time to his practice.



The Board of Directors of the Royal College of Dental Surgeons will hold a meeting in the College building October 19, to conduct the usual routine of business for the coming session.

THE ANNUAL CONVENTION OF THE ONTARIO ORAL HYGIENE COMMITTEE OF THE ONTARIO DENTAL SOCIETY

The annual conference of the Ontario Oral Hygiene Committee will be held on Tuesday, November 21, 1916. At this date reduced fares can be secured on account of the convention of the Horticultural Society.

Part of the programme will have special reference to the mode of carrying on oral hygiene work in districts outside of the large cities. The subject will be presented by one who has special qualifications for offering suggestions regarding the best means of carrying on such a propaganda—Inspector Taylor of St. Thomas Public Schools. Mr. Taylor was at the conference last year and is impressed with the importance of the work, as it affects our national vigor.

Last year Dr. F. E. Bennett, of St. Thomas, set a good example by bringing with him to the conference Inspector Taylor. The Executive invites all who can to bring with them the school inspector of their district and assures them a hearty welcome.

Special notice will be sent to those who are known to the Executive to be interested in Oral Hygiene education. Those reading this notice who would like further information can have it by applying to the Secretary, Dr. N. S. Coyne, 533 St. Clair Ave. West, Toronto.

OFFICERS OF THE P. E. I. DENTAL ASSOCIATION

The Prince Edward Island Dental Association met at Charlottetown on September 27, 1916, when, after the usual routine business was disposed of, the following officers were elected:

A. A. Lockhart, President.

J. H. Ayers, Vice-President.

J. S. Bagnall, Secretary-Registrar-Treasurer.

A. B. Reid and H. McIntyre were elected to complete the Council.

J. S. BAGNALL, *Secretary*.

AMERICAN INSTITUTE OF DENTAL TEACHERS

The next annual meeting of the American Institute of Dental Teachers will be held at Hotel Adelphi, Philadelphia, Pa., January 23, 24, 25, 1917.

A number of papers, reports and discussions relating especially to dental education will mark this meeting. All dental teachers are cordially invited to be present.

ABRAM HOFFMAN, *Secretary*.

529 Franklin Street, Buffalo, N. Y.

ANSWER TO THE QUESTION IN SEPTEMBER ISSUE OF THIS JOURNAL ON PAGE 345

"Did you ever succeed in opening up the mesio-buccal root of an upper second molar through a distal cavity?"

YES, AND FREQUENTLY.

Proceed: Extend the cavity on the crown surface mesially as far as the frontal wall of the pulp chamber. You can now get your instruments straight down into the canal. Cut off your smooth broaches (explorers), also the Donaldson's, or any barbed broach you prefer, put these in a handle at right angle, and you can explore and partly enlarge the canal; now use the Kerr's Universal Broach reamer to further enlarge the canal, commencing with the finest and increasing in size; after this you can safely use a reamer in the right angle hand piece in the engine and enlarge canal sufficiently for convenient filling.

The sacrifice of the dentine cut away is fully repaid by the saving of the tooth; furthermore it is a benefit to cut away all overhanging dentine, as it will prevent future fracture of it.

CARL E. KLOTZ.

St. Catharines, Oct. 5, 1916.

THE LATE DR. F. A. LEFURGEY

Fred Allen Lefurgey died at Summerside, P.E.I., on Sunday, September 24, 1916, in the forty-fourth year of his age. Dr. Lefurgey graduated from the Baltimore Dental College in March, 1898, and successfully practised his profession in his home town until two weeks before his death.

RESOLUTIONS ON THE DEATH OF DR. F. A. LEFURGEY.

Whereas, our Heavenly Father, in His divine wisdom, has seen fit to remove from the sphere of his earthly labors our esteemed friend and brother dentist, Fred A. Lefurgey; therefore, be it

Resolved, That this Society deeply mourns the loss of one of its members, one whose good fellowship won our warmest affections;

Resolved, That this Society extend its heartfelt sympathy and condolence to his bereaved wife, brothers and sisters;

Resolved, That these resolutions be spread on the minutes, and copies sent to Mrs. Lefurgey and the DOMINION DENTAL JOURNAL.

J. S. BAGNALL, *Secretary, P.E.I. Dental Association.*

DENTAL PRACTICE FOR SALE.—\$6,000 cash. Dental Practice and equipment in Manitoba's best agricultural district. Illness in family necessitating sale. Apply, Dominion Dental Journal, Box No. 106.

Dominion Dental Journal

VOL. XXVIII.

TORONTO, NOVEMBER 15, 1916.

No. 11.

Original Communications

PULP CANAL OPERATIONS

E. S. BEST, D.D.S., Minneapolis, Minn.

Read before Ontario Dental Society, Toronto, May, 1916.

Fortunately for our patients and also for ourselves we are not able to create any new diseases of the dental pulp. Our great problem to-day is in handling periapical conditions which are arising from certain conditions and processes within the pulp canal, and of deciding upon some efficient method of preventing them. What I shall try to present to you to-night will be a form of technique or procedure whereby we can carry out this work of prevention with a reasonable degree of success. You must not expect me to assure you that it is possible to open and fill all pulp canals. I do not believe it is physically possible for any man to do this.

In any task which we have to perform there are generally two ways of going about it. An intelligent man knows the appearance of that particular task when it will be finished. He knows this from careful observation. He has made a study of the cases handled by him in the past, and before he attempts this particular task he will pause for very exhaustive deliberation and study. He further knows just about what is going to be demanded of him before he commences the operation, and his plans are laid with the greatest care. He knows what valuation to place upon his services. You ask him what his fee is to be and without hesitation or without explanation he will tell you candidly what it is to be. The unwise man in attempting this task does not know or does not care what this particular operation will look like when it is finished. He does not pause for deliberation, but he rushes or stumbles into the work at once. He has no conception of what is to be demanded of him. He has practically no plans, and when it comes to his compensation the best he can do is to guess what it will be worth.

In dentistry I would illustrate these conditions first by the man who is going to do, for instance, an operation of cavity preparation and gold foil filling according to Black, and secondly by the man who performs a pulp canal operation as it is commonly done. The first man is familiar with the finished appearance of that particular operation even at its commencement,

and all his efforts during the time of the operation are directed and controlled by his preconceived idea of the operation when finished, and idea of the standard he has set up. He knows the shape of the cavity walls and the outline of the margins. He is wise enough if it is to be a large operation to not tackle it at the end of the day when he is tired. He selects very carefully his gold. He knows so well that he can tell exactly if a patient wishes to know, what that particular operation is going to cost.

In pulp canal work a great many dentists who are unwise, do not know what a pulp canal operation should look like when finished. I mean by this that the only way that we can tell what a pulp canal operation is like in the mouth is by the use of the X-ray. You know that the great majority of dentists do not or will not at the present time use this method as they should. How much preparation do the majority of dentists make for a pulp canal operation when they wish to remove a vital pulp? From a very careful investigation I find that they will generally use a little jar of arsenic and a barbed broach, sometimes rubber dam, often not, and possibly a reamer or two, generally not sterile.

I want to illustrate a point which I am very anxious to get home to you to-night, and that is: Why we are having so much trouble from pulpless teeth? We do have it despite all the denials which we have made and want to make in our own defence. Why do we have these infected areas around the apices? I would liken the human tooth to a tube, because of the fact that it has a channel from one end to the other. In a pulp canal operation you have an open tube, one end of which is resting in the oral cavity, and you all know the normal condition of the oral cavity is a septic one. The other end of this tube is planted deeply in the human system, and infection from the oral cavity has not far to travel until it too is planted deeply in the human system. I think that is about as simple an illustration as we can get to show why we must be so careful in handling these teeth, if we are assuming the responsibility of performing a pulp canal operation. If we are not responsible, who is? How far do the majority of us go in opening a pulp canal and removing the pulp tissue? Do we stop at the first obstruction we meet with in using a barbed broach? Ottolengui has said, "after we have practically exhausted our patience in opening these canals that we should take a hitch in our belt and go over the work just as long as we have gone over it to that point." How long is it going to take to thoroughly open one of these canals and fill it? That is something that unless you have gone through this work from start to finish and your radiograph shows you have opened these canals to the end and that they are filled, you have no conception of what it means, and when you have no conception you cannot tell what is going to be demanded of you. We can not make a decision over night regarding root canal operations and expect that next morning we can proceed to completion with a perfect operation. The technique is a difficult one to master.

We have been talking a great deal about dentists not getting large enough fees, but I believe as far as root canal work is concerned we have been getting paid too much. I have made a very careful examination of many hundred cases of pulpless teeth, and I want to make this explanation here that these were not the so-called "sick teeth" which came for X-ray examination, but they were teeth which were radiographed in the mouths of patients who had come for some other trouble. The radiographs were of every pulpless tooth we could find, and in these cases we found not over 10 per cent. of the canals had been filled. We also found that over 70 per cent. of the unfilled ones had rarefied areas around the ends of the roots. With this knowledge of what is actually taking place I want to ask you this. Does this magnanimous consideration which we have for our patients, which we illustrate so nicely when we are drawing that beautiful picture about the young girl working in the store who must have a pulp removed and who cannot possibly pay a fair fee for it—I want to ask you does the acceptance of this small fee and giving that tooth attention which may mean, and in a large number of cases does mean, a resulting diseased condition around the ends of these roots, does this allow us to be honest men or not? Do we give our patients a chance? If the almighty dollar must govern this operation then let us get down and figure it out and be fair and honest about it, from the patient's standpoint as well as our own.

We have heard a great deal recently about the homogeneous origin of these peridental infections. Much good having come from the writings of Ulrich on this subject. One explanation of this, is that a mechanical injury has been caused to the tissue around the root tip by breaking off the pulp and that this has been sufficient to cause a wound and create an area of lowered resistance where bacteria which has been in the blood will be deposited. I do not believe the mechanical injury is the one we have to consider, because from examination of many of these cases it is quite plain to be seen that with the instruments ordinarily used the operator did not get anywhere near the end of the root, and consequently did not create a mechanical injury. I believe the injury is a chemical one, and I would like to consider the use of arsenic. You all know the frightfully destructive nature of arsenic. Place a little bit of it in the gingival crevice and where is the action of the arsenic going to stop? And when it gets to the ultimate end of its action how has it travelled there? It has travelled by means of the tissue that it has destroyed. Do you imagine that you can seal arsenic in a tooth and have the action of that arsenic travel along that pulp tissue, devitalize it, and have the action of that arsenic automatically stop at the end of the root? I am firmly convinced that this is an impossibility, and in view of the fact that it is not necessary to use arsenic I think its use should be discontinued.

Another thing which I believe has been causing us a great deal of

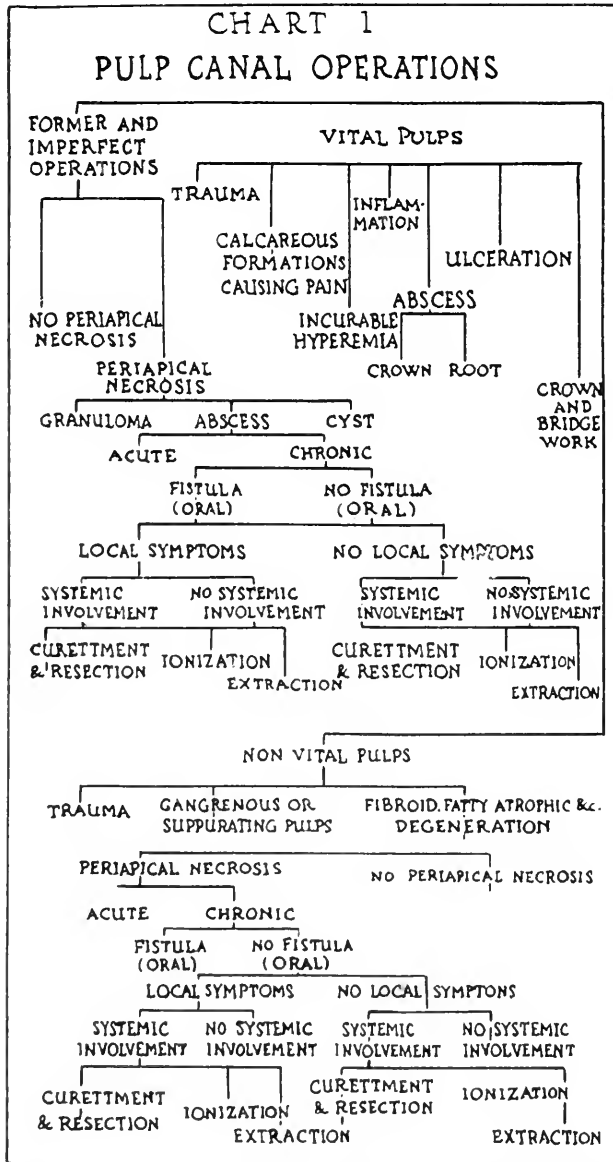
trouble is the fact that we have been using all kinds of drugs in these root canals without any conception of what the ultimate action of those drugs would be upon the tissues around the ends of the roots. These tissue destroying drugs have beyond doubt destroyed the peridental membrane because their action has passed through the foramen, and where it is destroyed, either from the use of arsenic or some of these other drugs, we then have our area of lowered resistance where bacteria may be deposited from the blood stream and we may have a secondary origin of infection.

I believe that the remedy for the present state of this work lies first in a self-analysis. We must realize and believe that there is such a thing as human error. We must lose some of our ego. We must also realize that possibly we possess some of this human error ourselves. We will then send for some of our cases which we feel quite confident have not had any trouble from pulp canal operations. (Note I say trouble *From* pulpless teeth and not trouble *With* pulpless teeth), and having made arrangements with some man to do the X-ray work for us—although it is a good plan for us to instal and operate our own X-ray machines—have these cases radiographed. Now those who have not tried it may discover that what they find may make them so discouraged and disgusted with the practice of dentistry that they may want to give it up, but practically every man who has made any success, except some of the pioneers, have had the same experience, when they felt that in justice to their patients they would like to give the whole thing up. So you will have to go through the same experience if you have not already done so. After having devoted considerable time to this work almost exclusively, and having seen the results of root canal operation, I could not understand why some of my confreres couldn't see it the way I did. When we would see these patients coming to us with their constitutions undermined and upon the extraction of these pulpless teeth which represented what we believed was all that was possible in root canal work, and these patients would get better, I couldn't understand why so many men could not see the serious side of this work until I found that these men almost to a man did not make use of the X-ray in their work, and we were trying to convince them of something which was contrary to their clinical experience. They would use arsenic and remove a part of the pulp and during the operation take absolutely no precaution to maintain asepsis and if that root didn't get sore or a fistula be established they were satisfied in their belief that they were not having trouble with pulpless teeth.

If the rank and file of the dental profession are satisfied with their belief that there is no trouble *With* pulpless teeth and the problem of the trouble *From* pulpless teeth is too large for them, they must surrender some of their rights to the physician who will then say when they shall and when they shall not handle pulpless teeth.

The indifferent dentist will soon sink to the level of a mechanic, pure and simple, but for the progressive dentist there is no option, he must realize what it means to properly handle pulpless teeth and be prepared to do it. Dentistry never had such a chance as she has now. She can be made the peer of the professions. If we fail this time and if the medical profession make a distinction in our ranks between those who know and those who do not know, it is our own fault, it is yours and mine.

PULP CANAL OPERATIONS.



Shows the condition found in the three different classes of pulp canal operations.

CHART II.

FORMER AND IMPERFECT OPERATIONS WITH NO PERIAPICAL NECROSIS—CONSERVATIVE OPERATION.

1. X-ray examination.
2. Isolate tooth.
3. Xylol-Rhein pics—Reamers to remove filling material.

4. XXX Fine bristle (Pathfinder) H_2SO_4 Paste; Reamers, extra fine.
5. XXX Fine file.
6. XX Fine file.
7. XXX Fine short barbed broach, H_2SO_4 30% sol.
8. XX Fine short barbed broach, H_2SO_4 30% sol.
9. XXX Fine ordinary barbed broach, H_2SO_4 30% sol.
10. XXX Fine Apex curettes.
11. XX Fine Apex curettes.
12. Measurement wires—X-ray.
13. Oil of Cloves.
14. Ionize.
15. Fill canals: Gutta Percha, Chloroform dr.iii., Rosin gr.xii. (close unfilled canals).
16. Seal canals.
17. X-ray.

Shows the various steps involved in a conservative operation. That is when our duty is complete, when we have cleaned and filled the canals.

CHART IIB.



Shows the indications for a radical operation. A diseased area is seen over the cuspid, the removal of which would be a necessary sequel to a pulp canal operation. Also under Classes 1 and 3, less frequently in Class 2, it would be advisable to remove the apical portion of the second bicuspid, which we might be unable to open and clean and fill.

CHART III.

NON-VITAL PULP—NON-INFECTIVE.

1. X-ray examination.
2. Isolate tooth.
3. Remove tissue in pulp chamber.

4. Remove tissue in large canals with sterile barbed broaches.
5. In fine canals, Pathfinder, H_2SO_4 30% sol.
6. XXX Fine file.
7. XX Fine file.
8. XXX Short barbed broach, H_2SO_4 30% sol.
9. XX Short barbed broach, H_2SO_4 30% sol.
10. XXX Fine barbed broach, H_2SO_4 30% sol.
11. XXX Fine Apex curette.
12. XX Fine Apex curette.
13. Measurement wires—X-ray.
14. Oil of Cloves.
15. Fill canals: Gutta Percha, Chloroform dr.iii., Rosin gr.xii. (close unfilled canals).
16. Seal canals.
17. X-ray.

In this operation we are not dealing with an infectious pulp. Hence do not have the danger of carrying any of this material through the foramina.

CHART IV.

NON-VITAL PULP—GANGRENOUS OR SUPPURATING PULP.

1. X-ray examination.
2. Isolate tooth.
3. Remove contents of pulp chamber.
4. (a) Seal-Formo-Cresol, (b) Sodium Potassium, (c) Sulphuric Paste
—Immediate operation.
5. Oil of Cloves dressing.
6. Pathfinder, H_2SO_4 30% sol.
7. XXX Fine file.
8. XX Fine file.
9. XXX Short barbed broach, H_2SO_4 30% sol.
10. XX Short barbed broach, H_2SO_4 30% sol.
11. XXX Fine barbed broach, H_2SO_4 30% sol.
12. XXX Fine Apex cures.
13. XX Fine Apex cures.
14. Ionize.
15. Measurement wires—X-ray.
16. Fill canals: Gutta Percha, Chloroform dr.iii, Rosin gr.xii. (close unfilled canals).
17. Seal canals.
18. X-ray.

We must be very careful not to carry any of the infectious contents of the pulp chamber and pulp canals through the foramina.

CHART V.

VITAL PULPS.

1. X-ray examination.
2. Local anaesthesia.
3. Isolate tooth.
4. Remove coronal portion.
5. Large canals—barbed broach.
6. Fine canals—Pathfinder, H_2SO_4 30% sol.
7. XXX Fine files.
8. XX Fine files.
9. XXX Short barbed broach, H_2SO_4 30% sol
10. XX Short barbed broach, H_2SO_4 30% sol.
11. XXX Fine barbed broach
12. XXX Fine Apex curettes.
13. XX Fine Apex curettes.
14. Measurement wires—X-ray.
15. Fill canals: Gutta Percha, Chloroform dr.iii., Rosin gr.xii. (close unfilled canals).
16. Seal canals.
17. X-ray.

In removing pulp, if a diseased condition appears around the apex of this root, we must hold ourselves responsible. In this class of cases, arsenic and powerful tissue-destroying drugs in pulp canals are contraindicated.

CHART VI.

PROBABLE CAUSES OF PERIAPICAL ABSCESES.

1. Use of Arsenic.
2. Not using Rubber Dam.
3. Sealing Dressings with Cotton or Porous Cements.
4. Not Removing all Decay from the Cavity.
5. Not Cleansing the Field of Operation.
6. Use of Unclean Chip Blowers in Pulp Canals.
7. Use of Non-Sterile Cotton from Exposed Cotton Holders.
8. Wrapping Cotton on Smooth Broaches with Unclean Hands Immediately before Placing in the Canal.
9. Not Using Clean Instruments Sterilized Immediately before Using.
10. Sealing in as Dressings, Irritating and Tissue-Destroying Drugs.
11. Leaving in the Canals Non-Vital Pulp Tissue.
12. Forcing Instruments and Drugs through the Apex.
13. Not Removing all the Moisture from the Canals.
14. Not Filling Canals to Apex.
15. Use of Medicated Canal Pastes which Destroy Periapical Tissue.
16. Not Sealing Canals upon Completion of Filling.
17. Paying Little or No Attention to Asepsis.

In case we have been guilty of causing any of these conditions, we have contributed our share to the great number of infected pulpless teeth. Arsenic is dangerous and unnecessary. Periapical tissues are frequently destroyed by powerful drugs sealed in canals, and these areas may become the seat of an infection of secondary origin, haemotogeneous origin.

CHART VII.

HOW TO AVOID PERIAPICAL ABSCESES.

1. Use of Anaesthetics (local).
2. Use of Rubber Dam.
3. Sealing Dressings with Combination of Cement and Gutta Percha.
4. Thorough Removal of All Decay from the Cavity.
5. Liberal Application of Iodine and Alcohol to Field of Operation.
6. Use of Filtered Compressed Air.
7. Use of Sterile Cotton.
8. Use of Sterile Dressing Bristles and Canal Points.
9. Sterilization of All Instruments Immediately before Using.
10. Use of Non-Irritating Drugs as Dressings.
11. Thorough Removal of All Organic Tissue.
12. Careful Roentgen Examination of the Tooth, including Measurement Wires.
13. Proper Guidance and Care in Handling Instruments and Drugs in Canals.
14. Having Canals Dry to Apex before Filling.
15. Sealing Foramina and Filling Canals with Inert Insoluble Non-Irritating Substance.
16. Sealing Canals Flush with Floor of Pulp Chamber with Oxy-Chloride of Zinc Cement.
17. Maintenance of Asepsis During the Operation.

Contains some practical hints which will assist us in having more satisfactory results with our operations. In dental surgery, where we come in contact with the patient's system, the same principles apply as in general surgery.

DISCUSSION.

DR. FRANK PRICE: This paper has been exceedingly interesting to me, so much so that I make bold to offer some discussion upon it. I want rather to compliment than criticise the essayist. Much as I would like to enter into a critical discussion of the paper, I have not had time to think of anything in that line, but some of you may later on in the discussion. It is mainly to give you time to think that I am here.

I would like to emphasize a statement made that there is often destruction of tissue by the use of drugs, and I agree with the statement that we force drugs into the canal and force them into the apex, thus causing destruction of the tissues and lower the resistance to bacteria. As was sug-

gested, perhaps the innovation of oil of cloves or some other medicine would answer our purpose better. We often give the bacteria a fine opportunity to locate themselves, and if once located it is exceedingly difficult to drive them out.

Now, I have been fortunate enough to have the use of an X-ray machine. If I should tell you how much I use that machine, perhaps it would be hard to believe, but I do use the machine very often, and very often I have come to the conclusion when I see a radiograph of a fine canal filling, and see the large area of infection around the end of the root, it is possibly caused by poor treatment before the filling was inserted. I have not often heard that stated by our essayists, but I think very often we are careless in the treatment of a root, and insert a filling perhaps before we have knowledge that the abscess is cured, and we leave a septic condition at the end of the root, although there is no indication on the part of the patient that it is not cured, and we leave that condition there, and put in a fine filling, and the condition is made worse rather than better, because it is difficult in these very fine canals in order to fill them, and it is very difficult to get that filling all out again, if you have filled it as well as our essayist tells us we must do it. I would like to say something, too, on the operation for curetment of the end of the root. I would like to mention an incident in my practice a short time ago that would illustrate what I mean. A patient was suffering very much from rheumatism, and had suffered so seriously and so long that it seemed wise to make a photograph to find the probable cause. There was a bicuspid carrying a bridge, and we found an abscess at the apex, and I undertook the operation of curetment or removing the apical end of that root. The operation seemed to be very successful, because the mouth healed up quite readily, and the symptoms of the disease that the patient suffered with the rheumatism quickly passed away, and it seemed to be a very happy solution, but after a little while the rheumatism came back again as bad as ever. Now, I suspect very strongly that often we will operate in a case like that and leave the rest of the root septic. In this case I believe I removed the active cause perhaps for a time, and cleared out the pocket of infection, and the patient was not infected for a time, and became better, but the bacteria still remained in the root tissues. You can't see when the surface of a root and the whole tissue of a root may be not very severely infected with bacteria, and we have established a condition there by our treatment and suppose our patient is cured when we have still bacteria remaining in that root, and the whole area is reinfected, and the condition becomes as it was at the beginning.

I shall perhaps have an opportunity to say something to-morrow on the ionization treatment for which I have a great deal of hope, for I believe that will afford us some solution in such cases as that. I believe, gentlemen, that there are a very great many cases, and I have some reason to believe it, because of experience in my practice. I will give you an example of that also, and this is the statement I want to make, that very many people come

to us in poor health, and the cause of their ill-health is their mouths, and the patient does not suspect it, and the physician does not suspect it, and the dentist does not suspect it. A lady came to my office a short time ago. I had known her for some time as an invalid, and she told me that about twelve years ago she became ill and had rheumatism and indigestion, and very violent headaches, especially at times, and she had been, although ordinarily a big, strong woman, on the sick list. I suggested to her that possibly a central tooth which was off color might be a cause of her ill health, and she said if there was any possible chance of finding the cause to do so. Well, by a skiagraph I found that tooth was very badly abscessed, as well as a lateral.

I suggested that that must be extracted, that she could have no hope for good health until I extracted it, but I would try and save the lateral. I opened the lateral, and I decided there must be some connection between that lateral and her condition. She was wearing an upper denture with the posterior teeth, and she was not willing to have a bridge in, and I suggested we extract the two, and include those anterior teeth on her plate.

She took gas and had those teeth extracted, and although formerly when she had taken gas she had had violent headaches, strange to say she had no headache this time. She was in the office a short time after, and said she had no disturbance of any kind, and that her health seemed to be perfect. She told me she remembered that the trouble began in that tooth about twelve years ago, when she began to be an invalid. People come to us who are invalids, and who are not in efficient condition, and the cause may be in their mouths and they do not suspect it, and I believe we should look for it. I think the suggestion that was made about enlarging the canal before filling is a very wise one, and that we can fill a canal better if we can enlarge it. I will be glad to have an opportunity to say something on this subject later on. I thank you for your patience.

DR. HAROLD CLARK: Gentlemen, I would just like to say a word in commendation of one point in the paper we have just listened to, and that was as to the use of oil of cloves. Years ago Dr. Peck of Chicago made a series of laboratory experiments in the use of various oils to ascertain their efficiency as antiseptics, and also to ascertain their irritating characteristics. First of all he used guinea pigs. He made an artificial sore in the skin of the guinea pig, infected it, and then treated it with the various agents. Many of the agents, including oil of cinnamon, would sterilize the sore and then result in an extension of the sore through the irritation. Then again others, like oil of wintergreen, for instance, had little or no value as a sterilizing agent, but he found that oil of cloves was in every way fully as efficient as a sterilizing agent as even carbolic acid, and yet it produced no irritation. That is, when we put it onto these artificially infected sores, it would not only sterilize them, but it would hasten their healing, showing it had no irritating qualities, and the inference he drew from it was that it was an ideal

agent for apical treatment. Since that time I have always used it for that purpose, and the results have justified his statement.

DR. A. E. WEBSTER: Mr. President and Gentlemen,—I did not intend to say anything upon this paper, except now that I am here I wish to congratulate Dr. Best upon the clear presentation of the subject. We quite understand what he undertakes to do. The illustrations of his means of disinfection and his means of doing his technique without infecting the area are very good. I do not know whether I have ever listened to anything that was better upon that subject. The difficulty has always been to keep an aseptic area during this tedious and troublesome operation.

Of course, we know quite well that a buccal cavity in the third molar is very difficult to keep in any kind of aseptic condition while the pulp may be removed. He did not tell us just how to manage that one, but the conviction is growing that it should not be attempted. I think there are men in Dr. Best's own city who say that about ten per cent. of the third molars may be attempted successfully, and that the percentage raises a little as we go forward in the mouth. Now, we know there are those who say that ten per cent. of all cases is the limit of the ones that should not be attempted. The anatomical position of the teeth and the anatomy of the teeth make it impossible for many roots to be treated successfully.

Now, there are two or three other points that I would like to mention. Dr. Clark has mentioned one, the impossibility of successfully treating cases while the pulp canal is filled up with irritating drugs. It has taken a long time for the dental profession to realize that nature does anything at all in the way of helping to get rid of these infections. We have been harder to teach that subject than I believe our sister profession, the medical practitioner. It was so simple. When we discovered bacteria we then discovered something that would destroy them, and without any thought of the subject at all, we forthwith applied the things that would destroy the bacteria, not knowing they would destroy the vital tissues at the same time. It would seem simple now, when we know better, but it has taken us since 1897 or 1898 to realize the irritating properties of these drugs, and after reading Dr. Peck's experiments, and the experiments of Dr. Black and others, still we go on with formaldehyde and creosol, and send it up to the end of the root, and occasionally there is a sinus, and we fill up the tissues all around with these things. It is a wonder that nature puts up with it at all. Dr. Black well illustrates this in one of his articles of some years ago, where a dentist had washed through a sinus from the lower incisor coming out on the chin every day for six weeks, and it wouldn't get better. A storm came on, and the patient, who lived about eight or nine miles out of the town where he went to see the dentist every day, couldn't get back to the office, and it healed up, and the dentist tried to wash it through again, and it wouldn't go through, and he gave up in despair. It got better in spite of him. That is what many of us are doing with our treatments to-day. I would like to

ask, and it was not explained in my presence, why the essayist fills root canals at all. He seems to be greatly worried about getting them filled. I am not clear that that has been made plain by any of the men who have been discussing this question so ardently during the past two or three years. Will you explain to us clearly why all these root canals must be filled right to the end, when they use the materials they use? They use gutta percha. I will admit it is the best available, but sometimes it does not act as a barrier. In fact, I believe it rarely acts as a barrier to bacteria, so it would be well to have some of those who have such confidence in these operations, and in fillings, to explain to us why they fill the canals, and especially with these materials. I thank you very much.

DR. THORNTON: At the beginning of the meeting the Chairman gave a very pressing invitation to take part in the discussion. I heard a short time ago of an Irishman who landed at New York. He was walking along and he saw a saloon and went in, and there were fifty or sixty men there before him, and some were indulging in a fight. The Irishman looked in, and after a while he came in himself, and he said to the bartender who came to the end of the bar, "Mister, is that a private dispute, or is anybody at liberty to take a hand in it?" (Laughter.) I just want to take a hand in it, and for this reason, not that I wish to underestimate the value of the X-ray work, but I know there are not more than 90 per cent. of you who have X-ray machines in your offices, and I want you to go home and enjoy living with your own consciences regardless of the fact that you do not possess an X-ray machine, because there has been a great deal of very good work done, and successful work, by many of the men who listened to this paper, and you know you have something of the feeling of a spanked child when you listen to a paper of this kind, and you wouldn't like to say you had been doing this kind of work without the use of an X-ray machine. What are you going to do in the future? Are you going to send all your patients to somebody who has an X-ray before you devitalize a tooth, or are you going to continue in the way that you have been doing during the past year and kind of trust in Providence that after all it may not turn out too badly, for I want to assure you of one thing, that the purchase of an X-ray machine will not do away with all the ills of life. You will still have some, and still very large ones, on your hands even after you get a machine in your office. We had a case not very long ago in Montreal of a young lady who had been suffering for some years with a tubercular hip. She had been treated by a physician in one of the rural sections of Canada, treated for some time without any success, and then she came to Montreal and was treated by one of the specialists and was very happily cured. She went back to her home, and the physician there knew of a friend who had an X-ray machine not very far away from where he was practising, and he was anxious to obtain an X-ray photograph of the hip which had given the trouble. He sent the young lady over and they made a 30-minute exposure

of that lady's hip, with the result that the entire soft tissue of the hip sloughed away, and the father took her all over the land, and took her to Europe, but he did not save the young lady's life, and she died from too much X-ray. There are difficulties to be overcome, and if you are going to put an X-ray machine into your office, you must first make up your mind to learn to use an X-ray. Not everybody who has a machine can use it successfully. There is, however, one thing that I would like to draw your attention to, and it is this, that I am frightened that many of our students go from our colleges without an adequate conception of what surgical cleanliness means. There is more in what our friend from Minneapolis says than many of us have known, and I want to congratulate him on what he did say about the infection of canals by rolling cotton on broaches, and about the failure properly to adjust the rubber dam in all these cases.

I just want to draw your attention to one thing which I saw since I came into the building, on the programme, No. 8 on page 10, "Preparation of broaches for root canal work," by Dr. Amy. I do not know just what Dr. Amy is going to give you, but in Chicago this winter, as we came from the teachers' meeting in Minneapolis, we saw a little stunt by Dr. Gallie that has been a very great help to those of us who have been trying to teach surgical cleanliness, a method by which your old broaches may be used to very great advantage, a method by which cotton may be applied to them, and they may be kept surgically clean so that it will not be necessary to touch them with your fingers at all. If we would simply emphasize the fact of being absolutely as clean as it is possible to be under the circumstances, then I think with clear consciences we can go on and do our root canal filling. They will not all be successful, but at all events many of them will be, and will give good service to your patients, and the patients that die, metaphorically speaking, will not be greater coming from the hands of the dentist than those who die by bad treatment at the hands of the general practitioner. I heard our good friend, Weston Price, a great man in the United States, say there is no such word as perfection in dentistry. Let us bear that thought in mind. Even the X-ray men make mistakes, and I simply wanted to comfort you with this little solace, so that you may go home and sleep better even if you haven't an X-ray machine. (Applause.)

DR. SHANTZ (Berlin): I perhaps have reason to have listened to this paper in a way which I hope very few of you have. Some of you will remember that I was here at the school during the years of 1895, '96 and '97. The year before that I had some dental work done, but not as early as I ought to have had it done. For reasons that it is not worth while to go into I had X-rays made of some of those teeth last fall, about six or eight months ago, following one treatment on one root on one tooth which had been perfectly comfortable for twelve years. I have had rheumatism and sciatica to the extent of not being able to turn over in bed except as I reached up and did so by the muscular force of the arms. I say, gentle-

men, I hope there are very few of you that have the reason to take the interest in this paper that I have. You will probably not be surprised to know that another tooth that was shown to be in trouble by the photograph or skiagraph, has been removed by Dr. Webster from my mouth, and there is still one slated for extraction. Dr. Webster at the time he diagnosed my case suggested that possibly there was a degree of anaemia present. Well, thinks I to myself, I don't know whether he is right about this tooth or not, but I am going to check him up on that proposition, and I had a physician make a test, and he found 74 per cent. Following the treatment of three teeth I had another test made, and it showed 89 per cent. After I had been working for an examination, also, I was laid up in bed for a number of weeks. Perhaps the strain which I was under was some excuse, but when I saw all those things, the first question that arose in my mind, gentlemen, was, how many of those conditions have I created in the fifteen years of my practice? That was the first question that confronted me, how many of those, perhaps, have I let loose in the State of Indiana, where I was six years, and in the State of Washington, where I practiced nine years? The second question that presented itself to my mind was, what am I going to do about it now? Am I going to proceed and do some more?—and that is where this X-ray comes in. Dr. Webster was very careful at the time to show me all the dark spots on those skiagraphs, because he was looking for them. Those were the things we were hunting for, but there was one thing he did not draw my attention to, and I do not want you to take a wrong inference from my remark now, but there was one root that showed no disturbance, no infection, no nothing. It showed to all intents and purposes just as good a root as you could find on a vital tooth, and there was nothing had been done to that root for twelve years except the mummifying paste put into the pulp chamber (Laughter) Now, I am not talking in favor of mummifying paste, gentlemen, and I will tell you why, because that root that was in that condition was the anterior root of a lower first molar, and it was the posterior root of the same molar that did show the abscess, which with one treatment cleared up the hip. So I say I am not talking in favor of mummifying paste very strongly just yet, but the thing I am going to ask is, who is here to say that if we had used all the precautions, and if no arsenic had been used on that particular tooth, if the rubber dam, and the surgical cleanliness that we have heard about to-night had been used, who is here to say that that posterior root would not have been as clean as the anterior one. I am persuaded that what we need at this time—although, as I say, I have been working for fifteen years on it, with not always the best of success, which was quite an affliction to me, but I have been working, and I am convinced that there are more faulty root fillings for lack of patient endeavor and skill on our part than one would imagine, and whenever I have failed to get to the end of a root, I feel that I have bungled, and I hope when I have seen Dr. Best to-morrow morning with the things he has

to show me, with what little skill I had before, I will go home and I will develop for myself in my new office, which I hope to establish shortly, as near aseptic procedures as possible. I hope to get as near to what he will show me to-morrow morning, and what I have already learned, as it is possible to get. I hope to be able to get very near the end of very nearly all of those roots that are so troublesome, and I am persuaded that these roots that are so fine that you can't get through to the end, I do not believe there is very much bacteria going to get through to give trouble.

DR. WEBSTER: I would like if Dr. Shantz would say something about his eye trouble. A great many specialists in eye cases call our attention to the fact that many people suffer in this respect because of the teeth. I have not had a report on his eyesight for some time.

DR. SHANTZ: I regret that Dr. Webster asked me for this, because it is excessively confusing. However, I will give you the history. I happen to belong to a family that is pretty badly afflicted with astigmatism. When I returned to the city a little less than a year ago, Dr. Willmott greeted me, and I was surprised that he remembered me after sixteen or eighteen years, and he asked me, among other things, how were my eyes, and I remarked that I had stopped practising dentistry something over a year ago, because my eyes forced me out. You can readily understand, after having graduated from Chicago in '98, and having practised six years in Indiana, and after that re-entering the college for twelve months, and taking a second degree in Portland, Oregon, that it was not pleasant to be forced out, to say the least, but that was the condition that confronted me, and I said, what is the use of putting up a fight? Dr. Willmott remarked when I entered the school for the first time, and he saw the expression of my eyes, he thought I was a lad that had better do something else. I asked Dr. Willmott where was the best oculist in the city, as I wanted a little attention to my eyes, and he referred me to Dr. Culverhouse, on Richmond street, and he suggested that by treatment he could give me great improvement in my eyes. During the last week of September I was to write an examination, and while I was here I was taking the treatment that the doctor suggested. Following that I had the skiagraph taken to which I have referred a while ago, when Dr. Webster made the diagnosis, and I have been ever since New Year's, working full time and over-time practising dentistry, and reading until ten and eleven, and sometimes twelve, and occasionally till one o'clock in the morning, preparing for an examination that I wrote off two weeks ago to-day, and my eyes are probably in a better condition than they have been, but whether the trouble came from those troublesome teeth, or whether the relief came from the treatment of the teeth, or the treatment that was given me for my eyes, I do not know. I do not care; my eyes are good, thank goodness.

DR. MASON: Mr. Chairman and Gentlemen,—I do not want to criticise the paper, but I would like to ask a question. Dr. Best has taken away

arsenic from us, and we will need something else. He removes the pulps with local anaesthesia, and I would like to ask him his method, whether it is conductive anaesthesia, or whether it is pressure, or how he does it, and if it is pressure anaesthesia, how he handles the pulp that is partially devitalized. We all know if we have a pulp, an exposure of a nice healthy pulp, and we use our cocaine and pressure, we have very little trouble, but there are other pulps, most of them in a condition of hyperemia, where the pressure gets us into a great deal of trouble and gives pain.

If we are going to discard our arsenic we must have some treatment to fall back on.

DR. PRICE: I would like to ask Dr. Best how he makes his examination with his electric current if there is no metal filling in the teeth, how he proceeds to make the examination to find if the tooth is vital when there is no cavity and no filling.

DR. PEARSON: Dr. Best has told us about 10 per cent. of the canal fillings he examined were successful, and I want to know if he can tell us what materials were used in those canals. We find a number of them that are not successful that have had cotton in them fifteen or twenty years, and we find some with iodoform that has been in a long time. I would like to know if he thinks the iodoform fillings are better than the cotton filling or gutta percha, and which of these are the successful ones.

DR. DAY: I would like to ask the essayist how we can tell how these infections at the ends of the roots after our treatment are cured in that class of case where the radiograph shows a rarified area, and it is suspected that there is septic infection there. If we treat it in the accepted way, why there would still be a rarified area there for several months, that is before the bone grows in again. I presume we cannot tell by another radiograph. We also know that in some patients treatment of infection in any part of the body will respond quicker than in other patients, and that being true also in the mouth, how are we to tell how long the treatment should be pursued, or, in other words, should we treat all cases the maximum length of time, and what is that maximum length of time. If we cannot tell just when those areas are cured, then even this perfected treatment of root canals is more or less guess work. If we could not only know how to diagnose this trouble and how to treat it, but also when to stop the treatment, it would be a benefit to us.

THE PRESIDENT: If you have finished the discussion, I would like to say before I call on Dr. Best that I am very glad to have heard the trial and conviction of the third molar. (Laughter.) Also I would like to say Dr. Best has thrown more light on the subject perhaps than he had intended, seeing that everything has been blamed to dental lesions. I now see that through his treatment another lesion, too common, but not hitherto followed to its ultimate cause, may also be healed. The new treatment will cure

anaemia of the pocket, as well as the other parts of the system. (Laughter.)

DR. BEST: I do not want anyone to misconstrue what I have said here to-night to be a criticism of the dental profession and what they are doing. It is simply a plea to raise us from a plane which we now occupy, which is an unenviable one. I have no criticism to make. I have endeavored to keep away from criticism, but, of course, it is rather difficult to present these facts rather pointedly and not have it appear as criticism.

Dr Price mentioned a very important point when he brought up the case in his practice of curetment and resection, and the systemic disturbance disappearing and then returning. He believed it was due to the fact that possibly the tubuli of the dentine was infected. Now, Dr. Black has shown us where the tubuli of dentine may be crowded with bacteria, and so, when we do a resection, we ionize that tooth and try to get all the benefit we can from the ionizing, and try, if possible, to kill the bacteria in the tubuli, and prevent as far as possible a further infection of the tissues, following resection. Sometimes we have found in the extraction of these infected teeth that there is a violent reaction of all the symptoms that the patient has suffered from or has complained of.

Now, for Dr. Webster, with reference to that disto-buccal cavity on the third molar. We draw the line at third molars in normal position when it comes to a pulp canal operation. I again reiterate I think it is a mistake for any man to make the statement that he can fill all pulp canals, because he may fill them if he gets them open, but I do not believe there is a man living who can open all pulp canals. I do know this, that we can pretty nearly reverse the percentage which has existed, and we can pretty nearly open and fill very close to 90 per cent., if we proceed properly. About filling canals to the end: The reason I claim we should endeavor to open these canals to the apical portion of the root and fill them, is because our X-ray shows that the teeth handled in that manner give the best evidence of healthy conditions around the ends of the roots, and if we are depending upon our X-ray evidence, which has been a great help to us up to date, I believe we ought to recognize that as an indication that it is the proper thing to do, and in addition to that it appeals to me as being a very common sense thing to do.

Dr. Thornton, I hope that that conscience that you want the men to take home with them will prove to be about the most troublesome bedfellow they have ever had.

Another thing, regarding the extensive use of the X-ray, I am very glad that Dr. Thornton said what he did, because there is one point I overlooked, and that is we may do a great deal of harm from using the X-ray without a knowledge of some of the dangers connected with it. One of the first things, of course, we would naturally expect you to do would be to become thoroughly experienced in the manipulation of the X-ray machine

and the dangers in handling it, and some of the disastrous results that may follow its injudicious use. That, of course, is very evident. Some men have too much confidence in the X-ray. They see all kinds of things with it. I believe the proper attitude when you are making an X-ray examination is to go at it with an open mind, and do not see trouble before it occurs. Let your mind be a blank, without prejudice, and ready to recognize, if possible, the various things you find.

Regarding those very small canals which are so difficult to open, the statement is frequently made that if a pulp canal was so fine you could not open it, that it would in all probability be too fine to give any trouble. Now then, we took 145 cases of buccal roots of upper molars, the mesial roots of lower molars, the upper first bicuspid, and the lower four anterior teeth, which I think you will agree with me are the most difficult roots to open. We took those cases and radiographed them, and we found that over 80 per cent. of them showed rarified areas. Now, you had better believe that you are handling just as dangerous a problem in these small root canals as you are in the large ones.

Regarding the method of anaesthesia, we use almost entirely interosseous and conductive anaesthesia, very seldom depending on pressure anaesthesia. Dr. Price mentioned testing teeth with metal fillings. Never touch a metal filling or a crown (gold) in making a test.

Another thing we have found in making an examination of these teeth, sometimes in the bicuspid, you will not be able to get a response from the buccal or lingual surfaces, but if you get down in the little fissures and sulci there you will get response. Many times teeth have infected pulps which do not show any disturbances in the radiograph, and they may be doing a great deal of harm.

Dr. Pearson asked about the materials which were used in these canals. I think we found almost everything which had ever been used, including copper wire and cotton, and some wooden points, and a great deal of canal paste. Gutta percha seems to be the prevailing material used in the successful ones. However, we did find that some of these canals were filled to the end with oxo-chloride of zinc cement, and in some such we found considerable necrosis. I had another interesting case where the root was filled with oxo-chloride of zinc, and there was a rarified area and the curetment was done and the tissue refused to close in over the end of that root, due possibly to irritation from the exposed cement.

I think I have covered everything in the line of questions, and I would simply close with this remark, that we must try to be just as sensible as we possibly can in doing this work and not make any extravagant claims, but at the same time, if we are going to accomplish anything, it must be brought about by more or less of a revolution amongst the dentists.

SOME OBSERVATIONS REGARDING ANATOMICAL ARTICULATION

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Read before the Canadian Dental Association, Montreal, September, 1916.

It is admitted by every thoughtful man that there is no such thing as "standing still" in life. There is either progression or retrogression. To do a thing as it has been done generation after generation is right only if the method of doing it has reached its most perfect stage. There are very few such methods in any profession, art or craft. No sooner are we apparently settled in one way of performing an operation than we are offered an improved substitute. Having thoroughly and satisfactorily tested such improvement, one would be guilty of folly were he to refuse the new method. The surgeon of to-day can freely perform operations that a few years ago would have been classed as impossible. Cures are effected where formerly patients were pronounced incurable. In the world of science the past half century has been filled with achievement after achievement, each more wonderful than the preceding, until now we are sending our messages enormous distances without visible means of transmission; vessels are propelled on the surface of and beneath the water, controlled by no human hand present to actually guide the motive power; even the projecting of torpedoes from such unmanned vessels, operated and fired at long distances, makes us pause and wonder where we will next be asked to turn our astonished vision.

In the face of such advancement, would anyone—scientist or layman—care to turn back to the era of the world's history when we were without electricity in its various forms, the telephone, telegraph and all its manifold manifestations of light and power?

If this be true in other fields of scientific thought with application to our everyday life, why is it that there is such hesitancy on the part of many in the dental profession to accept the opportunities which science is constantly offering? The growing need of dental service makes it incumbent upon everyone who is anxious to serve his patient to the best of his ability to carefully consider where he stands in the light of the present situation. In the field of operative dentistry, we are confronted with the fact that we have for years been failing to do what we conscientiously thought we were doing, viz., the proper filling of pulp canals. With the aid of radiography, much of our uncertainty has passed away and the results of our past errors made plain.

In orthodontia, methods of uncertainty have been replaced by definite methods of diagnosis and treatment.

In the department of prosthetic dentistry, no greater opportunities for advancement have been offered than through the proper articulation of artificial substitutes and the teeth furnished for their construction. The

methods of a few years ago are insufficient for the needs of to-day. In the restoration of partial dentures there is a recognition of the necessity of providing for all the movements that the mandible is liable to make in the use of any substitute for the lost tooth or teeth. Many a crown and bridge has met disaster during mastication owing to the failure to observe these precautions in construction.

The mandible, owing to its manner of attachment, affords some of the most difficult problems with which we have to deal. Owing to its freedom of motion, there seems to be an unlimited number of positions which it may assume in relation to the maxilla. In the restoration of lost parts these various movements must be considered and provided for.

While partial dentures—either fixed or removable—are affected more seriously than is generally appreciated by lack of proper care in this regard, the edentulous restoration is absolutely dependent upon a proper appreciation of anatomical articulation. That there are many viewpoints from which to observe this subject, is readily conceded. Likewise, it is certain that much is still to be developed before we have a perfect method of reproducing articulation in these cases. Still, there has been an immense amount of thought and energy placed upon the subject by many of our best investigators, including such men as Bonwill, Christensen, Walker, Hayes, Gritman, Snow, Gysi and others. The work of the early investigators recognized but few of the movements of the mandible, and the results, while an improvement over the simple open and shut occlusion of the plain line articulator, lacked much of the perfection of the apparatus available to-day.

Dr. Bonwill's articulator, based upon the principle of the four-inch equilateral triangle, formed by the temporo-mandibular articulation on each side and the mesio-incisal angle of the lower central incisor teeth, had but the lateral motion added to the open and shut.

Dr. Christensen and Dr. Walker carried their work further and produced, by movable lateral quadrant attachments, the downward and forward movements which occur in the human mechanism.

Dr. Gritman, collaborating with Dr. Snow at the University of Buffalo, gave to the profession an articulator which had many improvements, yet lacked the adaptability which later was offered in Dr. Snow's New Century articulator. Dr. Gritman's apparatus had condyle paths, which were the same on both sides, set at a downward and forward inclination of about 5 degrees.

With the exception of what were termed "facial calipers," devised by Dr. Hayes, no definite means of transferring the wax occlusion from the mouth to the articulator were offered until Dr. Snow gave to the profession his "Face Bow." This simple instrument is one of the most useful and necessary appliances that we have at our command. It is constructed in the form of an extended letter U, with a movable graduated rod at each end to approximate the position on the face of the temporo-mandibular

articulation. In the middle of the U-shaped arch is a movable lock nut, which in turn engages a bite-fork set in position in the occlusion wax. To make this clear, a brief description of the method of bite transfer may not be amiss.

The success of edentulous restoration depends upon so many details that it would be wise to begin at the taking of the impressions and proceed carefully with each detail. This is practically impossible in the time at our disposal, and I will simply make the statement that a perfect impression and cast of both maxilla and mandible are indispensable as prime factors. The method of obtaining such impression I must leave to each of you to decide. It is necessary, however, to take up the explanation in detail at this point, for upon these depend the success of the later operations. Failure to observe some of the details may seriously impair the final product. Trial base-plates, preferably of Ideal base-plates, should be carefully conformed to the casts and tried in the mouth. A poorly adapted trial base is a hindrance rather than a help. Upon the upper trial base a ridge of paraffine and wax should be securely placed and trimmed to give the approximate contour of the cheeks and the upper lip. The plane of occlusion should then be trimmed on a line parallel with an imaginary line drawn on the face from the external auditory meatus to the ala of the nose. This parallelism is essential and may be obtained by very simple means, such as a ruler held on the side of the patient's face in the position indicated and a small spatula held in position on the wax occluding surface. This should be tested on both sides.

The upper wax plane established, it is easy to conform the lower wax to its proper position and, by careful trimming, restore the full contour of the features as desired. This once established, the median line of the face should be marked on the waxes. Also the high and low lip lines, which mark the position of the upper and lower lips, respectively, in the position of smiling. These marks are to guide us in the selection of the teeth to be used. An added help is the marking of the position of the corners of the mouth. These marks normally indicate the position of the distal surfaces of the cuspid teeth and are the "land-marks" on our waxes of the inclusive position of the six anterior teeth.

The foregoing operation, if followed carefully, gives us what would correspond to a sculptor's model, and, unless used to its full advantage, it would seem foolish to spend time and energy in the endeavor to produce results. At this point is the great divergence in methods. If one is to discard the anatomical method, he will take these carefully prepared waxes, mount them upon a plain line articulator, with no regard for the relative position of the waxes and the point of articulation, and simply "set up" the teeth. It is conceded that the teeth thus set up may look well on the articulator, and even, by good fortune, may appear well in the patient's mouth,

but there is hardly one chance in a hundred that, when the sets are completed and inserted, the patient can do what should be possible with such a restoration.

Here the Snow Face-Bow comes into use. With the waxes in position, the bite-fork is warmed and inserted with the stem at the median line. This may be done with the wax outside of the mouth, if preferred. The fork stem should be placed on a line parallel with the plane of occlusion. The face-bow is then placed in position, with the lock-nut loosely affixed upon the stem of the bite-fork. The lateral movable rods are then adjusted upon the position, on each side of the face, of the temporo-mandibular articulation. These points should either be predetermined and marked upon the face or, for all practical purposes, placed one-fourth of an inch anterior to the tragus of the ear on a line with the outer canthus of the eye. These rods are marked with equi-distant gradations, and should be adjusted evenly on both sides and firmly secured by set-screws. The set-screw upon the stem of the bite-fork should then be firmly secured. The bite waxes, with the face-bow attached, may now be removed from the mouth. The Snow articulator is provided with lateral projections for the reception of the movable rods of the face-bow. The procedure of fastening the casts to the articulator is, briefly, as follows:

Secure the casts, upper and lower, in their proper positions, indicated by the trial base-plates; adjust the ends of the rods to the projections on the articulator; place the casts in such a position that the stem of the bite-fork is parallel with the surface upon which rests the articulator. The casts, properly moistened and serrated for the reception of the plaster, should then be fastened to the bows of the articulator.

This procedure gives us the casts in the same position relative to the joint of the articulator as the natural ridges occupy in relation to the temporo-mandibular articulation. There has been, however, no provision for the downward and forward movements, which the mandible may make. To provide for these, it is necessary to re-insert the bite-waxes in the mouth. This is for the purpose of recording the position of the protrusive movement of the mandible. Dr. Christensen used a small piece of soft wax on each side of the occluding surface of the lower wax, asking the patient to protrude the mandible, biting upon the soft pieces of wax. Dr. Snow improved upon this method by inventing what are termed "bite-gauges." These gauges are about one-half an inch long, with small downward right angle flanges to insert into the lower wax surface and an upward projection to mark the approximation of the bite upon the upper wax surface. The gauge should be placed in about the position of the first molar. The patient is then instructed to protrude the mandible, biting against the upper wax. The waxes may then be fastened together by staples and removed from the mouth. The set-screws controlling the movable condyle paths are then released, as also the posterior spring controlling the upper and lower casts.

The bite wax is then fastened to the upper cast and the lower cast drawn into position of the lower wax. This can best be done by inverting the articulator. With the casts thus secured, the set-screws are fastened, the bite gauges removed, the posterior spring re-attached, and the casts are ready for use. This procedure has brought the condyle paths into the same positions as the mandible assumed in its movement of protrusion. The positions of the condyle paths are seldom the same on both sides. The casts in this position will describe practically every motion the mandible is likely to make. Dr. Snow has just offered to the profession an improved articulator, called the "Acme," which has the added possibilities of bodily right and left movements, a valuable addition.

The teeth best adapted by edentulous cases are those originated by Dr. J. Leon Williams and called the "True Byte" teeth. The anatomical forms have been most truly and scientifically followed, and the results, when complete, will afford us a definite variety of selection within a comparatively small number of molds.

It is needless to describe in detail the setting up of the teeth. Let us briefly consider a few of the essentials. Using the upper wax as a guide for fullness, cut out the space of each in turn of the ten anterior teeth. These will all be on the same plane of occlusion, except the lateral incisor, which will be just a little shorter than the adjacent central incisor and cuspid. The first and second molar occluding surface will incline upward on a plane dependent upon the direction indicated by the condyle path, with which it will be parallel.

In setting the bi-cuspid and first molar, the facial surfaces of the cuspid, first and second bicuspid and the mesio-buccal cusp of the first molar should be on a line. The disto-buccal cusp should be inclined lingually, followed by the second molar set in a position according to the demands of the case.

Viewing the teeth in cross section of the cusps, right and left, the first bi-cuspid should be so set that the buccal cusps should be slightly higher than the lingual cusps. In the second bi-cuspid, all the cusps should be on a plane. In the first molars, the lingual cusps should be lower and the buccal cusps slightly raised; in the second molar, the buccal cusps should be raised still higher. The positions thus indicated make it possible for the mandible to move laterally with the assurance of the maximum contact in all positions of biting.

With the upper teeth in position, the lower may easily be adapted in their proper positions, beginning with the lower second bi-cuspid. In placing each bicuspid the positions of lateral movement should be carefully observed. The molars then may be adjusted and the anterior teeth easily placed in position. The teeth should be viewed carefully from the lingual as well as the facial surfaces, in order to obtain the greatest extent of surface contact.

It is not intended that the teeth should not receive a trial in the patient's mouth. There is no articulator made that is *absolutely* perfect, and the satisfaction of testing the arrangement of the teeth, as they appear in the mouth, will repay for the time and effort expended. It affords, also, the opportunity of making any slight changes which might improve the appearance of the individual case.

The foregoing method is such as to commend itself to the average practitioner. Dr. Gysi has given to the profession the results of a vast amount of investigation on the subject, both in apparatus and literature. His methods are those of the greatest accuracy, and but few have thus far adopted them. They are, however, the most comprehensive and, where fully understood and carried into practice, will produce the best results obtainable. It is not my intention to include this most excellent method in this presentation. My purpose is simply to arouse the interest of any who have failed to recognize the possibilities of this opportunity offered. Also, to gain by your discussion any further light which I may carry back with me to apply in the days that are to come.

SOME HINTS ON THE TREATMENT OF FRACTURES OF THE JAWS

JAS. M. MAGEE, D.D.S., L.D.S., St. John, N.B.

Read before the St. John Medical Society, St. John, N.B., February, 1914.

In this short paper I wish to offer a few hints which may prove of some value in the treatment of fractures of the jaws. I do not claim originality for the suggestions.

Fractures of the jaws have often been termed "mean" by the regular surgeon, simply because he has hitherto found difficulty in securing that immobility of the fractured bones which he can effect so much more easily in other regions and which is so necessary for a satisfactory union.

To be candid, I myself have seen but a few cases which would not be so styled with reasonable certainty. I shall not refer to the treatment of cases where the jaws are edentulous, because if surgical operations are not indicated, and they often are, some special kind of splint must be improvised to meet the needs of each case. In offering these suggestions, therefore, it is to be assumed that the patient has teeth which occlude, and, of course, this covers the great majority of cases.

Fractures of the maxilla are less liable to displacement when once reduced than are fractures of the mandible, and therefore the same degree of rigidly of fixation is not so imperative.

The greater the number of teeth in the mouth the more simple becomes the treatment.

A score of years ago the favorite splint for the treatment of maxillary and mandibular fractures was the vulcanite interdental splint, so constructed that several openings were left, through which food was administered. This splint required that the head be bandaged to keep the lower teeth securely set in the depression constructed for them. Later, the Kingsley splint, afterward modified by Dr. Flanagan, was found to be of greater value and giving greater comfort in mandibular fractures. This splint was constructed of vulcanite for the lower teeth only, and had heavy metal arms vulcanized into the body of the splint, which projected from the corners of the mouth and were bent backward again to reach as far back as the angle. Sufficient space was left for the looping back and forth of a bandage, above which padding was placed to prevent too great pressure upon the point or points of fracture. The bandage pulling the arms downward and pressing upward upon the bone held the splint firmly against the teeth. Then a splint, consisting of gold bands fitted to two or more teeth and united by stiff gold wire which was to be cemented to the teeth, was found a very great improvement.

Unless accompanied by discoloration, fractures involving only the body of the mandible may best be treated either by the application of a metal splint cemented on to the teeth, or looping brass wire round antagonizing teeth until they occlude.

In very many cases where the ramus is also fractured it has been found after the teeth have been brought into occlusion and the jaws at rest that a remarkably good union takes place without resort to any operation for the surgical application of either a wire suture or a silver plate.

For lacing the teeth together the regular orthodontia wire is especially applicable, but if that cannot be readily obtained, ordinary "rabbit wire" will serve the purpose, though it is a trifle too heavy.

The mental splint cemented onto the teeth leaves the patient free to use his jaws in some slight degree, and unless there are complications which necessitate the use of a bandage the patient is neither disfigured nor an object of interest for the idly curious. It will be found most advantageous in cases where there is at least one tooth posterior to the fracture. In construction is a matter of routine to the dental surgeon. Briefly, it is thus: Impressions of both upper and lower arches are taken and plaster casts run. Where the fracture is located the cast is cut apart, the teeth properly placed in occlusion, and the casts are in an articular. Heavy tin foil is burnished over the teeth, wax is added until a proper thickness has been made (if necessary a stout wire running round the lingual edges of the teeth may be waxed in for additional rigidity and strength) imprints of the upper teeth made in the wax by closing the articular, and then the piece is cast either in silver or aluminum. A silver splint may be struck up by the snaging process, but the cast splint is less liable to warp. This particular cast splint and its

manner of attachment belong to Dr. H. J. Kauffer, Consulting Dental Surgeon to the Harlem Hospital, New York.

Its application is thus effected (the patient being anæsthetized if necessary), the teeth are cleaned and made dry as possible, then crown and bridge cement having been placed in the depressions corresponding to the teeth, the splint is set, all the teeth being forced *home*, an accomplishment which usually requires the aid of a second person.

The Kauffer addition consists of two wires twisted together for nearly half their length, the two free ends passed between the teeth from the lingual side, one on each side of the tooth to be engaged, and these free ends then twisted tightly together. This loop grips the tooth vice-like. The ends are then turned upwards and again twisted tightly over the top of the splint. If two adjoining teeth are looped in this way the lingual wires from the anterior one may be twisted with the buccal wires from the posterior one, and vice versa. The wires are then cut off with ends long enough to tuck out of the way under the edge of the splint.

In order that it may be determined that the teeth are *home* the outer portion of the splint at and near the place of fracture may be cut away exposing the tip of a tooth on each side.

Besides the splint there are two variations in the use of the orthodontia wire. One is the attachment by cementation to teeth as nearly opposite one another in the jaws as may be selected for a loop "Angle" or similar clamp bands, and looping wire in a figure of eight back and forth over the projecting tubes or bolts and nuts as the case may be, after the teeth have been forced into occlusion. As many pairs of clamp bands as are necessary to ensure rigidity must be applied, and for this particular looping the "rabbit wire" which I have mentioned is about the right gauge.

The other, very aptly called lacing the teeth together, is twisting single wires round occluding individual teeth at the gum line, as many as are desired, and again twisting these wires from the opposing teeth together until the teeth are brought into correct occlusion. While two wires will usually hold the jaws immovable it is best to adjust a number in order that there shall be no soreness. A single tooth in each arch wired together, will hold the jaws so they cannot open, but after a day or so these two teeth would get sore from the tension exerted by the depressor muscles, therefore the lacing wires should be distributed well around the arch. All the wires must be looped on to the adjoining teeth before beginning the lacing together of the upper and lower.

Usually the only *treatment* required is cleanliness and with a metal splint in use the mouth may be kept scrupulously clean, while in event of either the clamp band attachment or direct wire lacing being resorted to, the wires are so small that little difficulty is experienced in keeping the mouth clean.

Objection may be offered to the idea of lacing the teeth together so the jaws cannot open, unless there are teeth missing, the loss of which afford opportunity for feeding, but there is very little ground for objection since at least a semi-solid diet is indicated, and this may easily pass behind the third molars in the great majority of mouths.

The "Angle" clamp band requires that the teeth shall be separated by wedging, before the cementation can be properly effected.

Dr. S. G. Ritchie, of Halifax, has suggested a slight modification, in that he uses matrix metal (thin sheet steel), which may readily be forced between teeth where it would be absolutely impossible to force a clamp band. A piece is fashioned long enough to make a loop around the tooth with the ends extending labially far enough to allow holes being punched in them for the insertion of a threaded bolt: The bolt is passed through the holes, washers to prevent the tearing of the steel are placed over the bolt ends, and the nuts are screwed tightly. These are now loosened, the band removed, cement placed inside, just as in the case of the "Angle" clamp band. These particular clamp bands may be readily made when the "Angle" clamp bands are not to be had, and there is always this advantage that there is no guess work about their fitting. Should either type of band irritate the cheek it is a simple proceeding to cover the projecting bolt or tubes with a piece of softened gutta percha.

Neither of these clamp-band attachments has any advantage over the direct wiring to the naked tooth, and they are both more difficult to apply since the lacing wires may be attached under any condition of moisture, while a considerable degree of dryness must be effected to render the cementing medium of any value. Moreover some time is necessarily consumed in their preparation, while the simple wire loops may be adjusted immediately.

As a final hint:—Since the teeth command the situation in cases of fracture, any tooth which has any attachment to the gums, even though it be entirely clear from its alveolus, is of value in the treatment and should be forced back to its place.

Selections

ACETYLENE FLAME, THE LABORATORY HEAT PAR EXCELLENCE

W. F. WILSON, D.D.S., Cleveland, Ohio.

With the passing of artificial gas, we have been searching for a fuel which will give us equally as good or better results when used in soldering or casting.

In acetylene, which we can purchase in tanks designed for use in automobile lighting systems, we have a gas which will give us all the heat we require, while it is as safe and its flame is as easily controlled as that of any fuel in use, and which can be used at a cost of only a few cents per month.

For soldering crowns, bridge work, etc., the only equipment necessary is a tank of gas, rubber tubing and special dental blowpipe, all of which articles can be purchased from the Prest-O-Lite Company, either directly or through the dental supply houses.

For casting gold an intense heat can be secured by using an ordinary artificial gas blowpipe, combining compressed air and acetylene. For melting platinum a higher air pressure combined with acetylene or oxygen and acetylene in combination are used.

In combining compressed air or oxygen and acetylene, the air or oxygen should be turned on first, then the acetylene. If acetylene is allowed to ignite unmixed with air, as it comes from the artificial gas blowpipe, a heavy soot is formed as the result of incomplete combustion of the carbon content of the gas.

Where compressed air is not available it will be found that acetylene alone used in the Prest-O-Lite blowpipe will give all the heat required the combination of compressed air and acetylene merely giving a greater degree of heat, which lessens the time required for melting gold for casting purposes and secures a degree of heat in the molten gold which causes it to remain in a liquid state for a longer period of time.

A comparison of the time required to flow a given quantity of 24-k. gold gave the following results:

Artificial gas	25 seconds
Gasoline	30 seconds

(Greater length of time required than that of artificial gas probably due to impurities in gasoline.)

Acetylene alone, using Prest-O-Lite blowpipe.	25 seconds
Acetylene with compressed air, using artificial gas blowpipe	6 to 15 seconds

(According to amount of air and gas pressures used.)

Acetylene combined with oxygen gives a heat of 6,300 degrees and is the hottest flame known.

The cost of installing the equipment is practically the only cost, as the cost of operating is so small as to be negligible. In buying the large size automobile light tank (40 cubic feet), hose and blowpipe, initial cost is less than eighteen dollars, and the cost of refilling the tank one and one-half to two and a quarter dollars, depending upon where purchased. A tank of gas will last six to eight months, making the cost the small sum of twenty or twenty-five cents per month. This has been the cost in my own laboratory. This gas has given excellent results in my laboratory, and while this may appear to be an advertisement of the Prest-O-Lite Company's manufactures, it is not written with that end in view, but to acquaint the members of the dental profession with a fuel which I believe will solve many of the difficulties experienced in the use of the inefficient, expensive or dangerous gases, which we have been forced to use in the past.

Used in the manner outlined, acetylene is the most efficient fuel that we have for use in soldering and casting, as it furnishes all the heat that could be desired, its use is safe, the appliance being portable and very easily operated, makes it most convenient, and its use is more economical than any other system that is being employed at the present time for this purpose.—“Dental Summary.”

Dental Societies

MINUTES OF DOMINION DENTAL COUNCIL

Minutes of the meeting of the Dominion Dental Council, held in Laval University Department, September 11th, 1916, at 10 a.m.

Present: Dr. Abbott (in chair), Dr. Bagnall, Dr. Woodbury, Dr. Jas. Magee, Dr. Geo. F. Bush, Dr. Cowan.

All the above presented credentials.

Minutes of special meeting held in Winnipeg read and adopted.

Dr. Bush presented a motion, notice of which he had given, which read as follows: "That the first part of section 0, article 2, of the Code of Ethics, be repealed, and that the section in future shall read: It is ever to be regarded as unprofessional to warrant work or operations as an inducement to patronage. It is also unprofessional to violate, or to be a party to a violation in letter or in spirit, of the Dental Law." This being an amendment to the constitution, a vote was taken by Provinces, resulting as follows: Prince Edward Island, yes; Nova Scotia, yes; New Brunswick, yes; Ontario, yes; Manitoba, yes; Saskatchewan, yes; Alberta, absent.

The motion was declared carried, and the constitution amended accordingly.

Dr. Cowan presented a motion from Saskatchewan which reads as follows: "That at the next meeting of the Dominion Dental Council I will move to amend the constitution so as to provide that the initial date for the Class C certificate shall be January first, 1906, instead of, as it is now, January first, 1905. This notice I give upon the resolution of the Saskatchewan Dental Association." This being a proposal to amend the constitution a vote was taken by Provinces, and resulted as follows: Prince Edward Island, nay; Nova Scotia, nay; New Brunswick, nay; Ontario, nay; Manitoba, nay; Saskatchewan, nay; Alberta, absent.

The motion was declared lost.

Dr. Woodbury presented a motion from the Dental Association of Nova Scotia, which reads as follows:

"1. That the standard of preliminary education required by the D. D. C. of C. be made the same as that required by the Faculties in Arts of recognized Canadian chartered universities of the various Provinces.

"2. That the High School certificate to be recognized must be those issued by the Department of Education of the various Provinces, and of the grades accepted for Arts matriculation, or endorsed by some recognized university for matriculation in Arts.

"3. That the subjects and options required for matriculation be named in the regulation.

"4. That these regulations shall go into effect for candidates taking the Dominion dental examination in June, 1917.

"5. That these new regulations shall in no wise interfere with the rights of candidates who will have already qualified under the present preliminary regulations."

Moved by Dr. Magee, seconded by Dr. Bagnall, that the above motion be taken up clause by clause, and that we go into committee of the whole to consider same. Carried.

Council resolved itself into committee of the whole, Dr. Magee in the chair.

Upon rising, Dr. Magee reported that clause one be not adopted, that clause two be adopted, that clause three be adopted, that clause four be adopted, that clause five be adopted, that a blank form be prepared to carry the above resolution into effect, and that the clauses adopted be incorporated as part of section 18 of the constitution.

Moved by Dr. Magee, seconded by Dr. Bagnall, that the report of the committee be adopted. Upon this motion the Provinces voted as follows: Prince Edward Island, yes; Nova Scotia, yes; New Brunswick, yes; Ontario, yes; Manitoba, yes; Saskatchewan, yes; Alberta, absent.

The motion was declared carried and the constitution amended accordingly.

Moved by Dr. Woodbury, seconded by Dr. Bush, that we do now adjourn, to meet again at two o'clock. Carried.

(Signed) E. M. DOYLE,
President.

(Signed) W. D. COWAN,
Secretary.

Minutes of meeting of the Dominion Dental Council, held in Laval University Dental School, September 11th, 1916, at 2 o'clock.

Present: Dr. Doyle, Dr. Bagnall, Dr. Woodbury, Dr. Magee, Dr. Abbott, Dr. Bush, Dr. Cowan. Dr. Doyle, president, in the chair.

Minutes of the morning meeting read and adopted.

Dr. Magee, as chairman of the committee *re* affiliation with the non-agreeing Provinces, reported as follows:

"Your committee *re* affiliation of British Columbia and Quebec in the Dominion Dental Council begs to report that correspondence with members of the profession in both Provinces failed to elicit any reply, and therefore I cannot report any progress. I, therefore, ask that I be discharged, more particularly as the secretary has to report a most favorable situation as regards British Columbia.

JAS. M. MAGEE,

Montreal, Que., September 11th, 1916.

Moved by Dr. Cowan, seconded by Dr. Bagnall, that the report be received and the committee discharged with thanks. Carried.

The secretary submitted correspondence had with the officials of British Columbia regarding the affiliation of that Province with the D.D.C.

President Doyle reported the result of his visit to that Province.

Moved by Dr. Cowan, seconded by Dr. Bagnall, that we have received with pleasure and interest the report as above, but inasmuch as we have no application from that Province for affiliation, therefore be it resolved that the correspondence be filed. Carried.

The secretary submitted the correspondence had with the Board of Governors of Quebec regarding affiliation of that Province with the D.D.C. He also reported the result of his visit to the Dental Association of Quebec to discuss said affiliation.

Moved by Dr. Abbott, seconded by Dr. Bush, that we have received with pleasure and interest the report as above, but inasmuch as we have no application from Quebec for affiliation, therefore be it resolved that the correspondence be filed. Carried.

The secretary submitted his report.

Moved by Dr. Abbott, seconded by Dr. Bush, that the report be tabled. Carried.

The report reads as follows:

"Three regular and two supplemental examinations have been held since we last met. At the exam. in 1914 there were 48 candidates, who wrote on 168 papers, seven candidates failing in eight subjects. At the supplementary two candidates wrote, both passing. In 1915, 47 candidates wrote on 289 subjects, and there were 12 failures. In the supplemental of 1915 four candidates wrote on five subjects. One of these did not receive the necessary number to pass, but was entitled to a re-reading in medicine and surgery. This was granted him, and a pass given. At the general exam., 1916, 53 candidates wrote, but on only 186 subjects. Fifteen took the practical exam., but did not present themselves for further exam. As these would be final men, it is evident that some unusual reason is the cause of their non-persistence, and I am of the opinion that the Army Dental Corps was the cause. It is to be expected that these men will complete their examinations when they return, in which case the falling off must be regarded as only temporary. In the exam. of 1916 four candidates failed in five subjects, and ten men have qualified for our certificate. By residence these are distributed: Four to Ontario, two to Nova Scotia, two to Manitoba, and one to New Brunswick. While there has been a marked decrease in candidates in the past three exams. compared with 1913, where 73 candidates wrote on 325 papers, I cannot attribute it to the severity of the exams., as there has been a comparatively small number plucked, and not a single protest received against the papers. There have been no applications for a class D exam. As all men who could qualify under class D can now qualify under class C there is no object in longer burdening our literature with reference to this class.

Four men have applied for a class C certificate. Three of these have been allowed and issued. Here, too, there has been a marked lessening of applications; less than half the usual number. The one application refused came from a man formerly registered in Nova Scotia, but who had recently moved to Saskatchewan. Upon reference to the Nova Scotia Board it was found that he had not paid his fees there for some 14 years. His application was rejected. His solicitor then advised your secretary that he would forward the necessary 14 years' fees to Nova Scotia, if assurance could be given that that would be satisfactory. As, however, he had been fined for illegal practice in Saskatchewan he was informed that he must apply to the Saskatchewan Board for exam. This he has not done, and has since been fined several times.

Early last fall I received several letters and wires from the Quebec Board of Governors asking if I would attend a meeting of dentists of Quebec, to be held in Montreal, to explain the D.D.C. Believing you desired that I should show every courtesy to a sister Province not yet a part of our dental confederation, I accepted the invitation. A very full discussion was had, but the vote was against becoming an agreeing Province. As nearly as I could gauge the sentiment of those present there was a general concurrence in the work and system of the D.D.C., and a belief in its advisability, but that it would have to be made to apply more specifically to Quebec before it would be entirely acceptable there. As nearly as I could gather, the desire was to have the right to be examined in French established. This I understand would mean that the examination papers would have to be set in French as well as English, and valued by valuers who understood French.

For your information I quote the exact wording of the resolution passed by the Quebec Dental Association, when I had the honor of meeting with them last fall. The resolution reads: "That the Board of Governors be instructed to affiliate their college to the D.D.C. when it shall have been proven to their satisfaction that French-speaking dentists may get from the affiliated Provinces equal treatment to that given English-speaking dentists in this Province."

A comparison of the past two years with those immediately preceding shows in class C a reduction of ten certificates issued. This represents a loss of one thousand dollars in revenue. If this is to continue, then more attention must be paid to the examination to popularize them. Looking forward, however, it is quite probable that a number of those now serving with the C.A.D.C. may take advantage of the D.D.C. in new fields, their practice having been already broken up by absence. I think it well that we should now determine the course to be pursued to returning men. The probabilities are that many privileges will be asked.

At the recent examination one candidate sent me \$40, advising me that he would write in Calgary. I accordingly made all necessary arrangements with Dr. Heacock, our presiding Examiner in Alberta. The candidate

evidently did not appear, as I have heard nothing of him since. Dr. Heacock would be placed to considerable expense and inconvenience, but we have no authority to pay him for it. I recommend that he be paid ten dollars, and that fifteen dollars be deducted from the fee paid by the candidate to pay the expenses.

Moved by Dr. Abbott, seconded by Dr. Bagnall, that the clause referring to the examination of Dr. Halt and payment of Dr. Heacock for expenses incurred be adopted. Carried.

Moved by Dr. Abbott, seconded by Dr. Bush, that the expenditure by Dr. Cowan as Secretary of ten dollars on his trip to meet the Board at Montreal be authorized and that he be re-imbursed to the extent of \$20 for his expenses. Carried.

Moved by Dr. Magee, seconded by Dr. Abbott, that the payment for the expenses of the President on his visit to meet the B.C. Board be authorized. Carried.

Moved by Dr. Woodbury, seconded by Dr. Bagnall, that the account for the expenses of Dr. Doyle for his visit to the B.C. Association be sent by the Secretary to the Secretary of the B.C. Association. Carried.

Dr. Woodbury submitted the following resolution and asked that it be inscribed on the minutes. Resolution passed by the Nova Scotia Board: "Whereas we believe it may be of interest to the profession at large in Canada to know the mind of the Nova Scotia Dental Association respecting the value and importance of the Dominion Dental Council to the profession of dentistry in the Province.

"It is, therefore, declared that after having been since its organization one of the agreeing Provinces in the D.D.C., we are convinced that it has been the means of raising the status of the profession.

"That it has brought to the notice of the general practitioners of medicine the standards of education and training of the dental surgeon.

"That it has in every Province been the most potent means of preventing Provincial Legislation detrimental to the general welfare and has inspired good laws." On motion of Dr. Woodbury, seconded by Dr. Cowan, resolution was ordered inscribed on minutes.

The Treasurer submitted the auditor's report as his report.

Moved by Dr. Woodbury, seconded by Dr. Bush, that the auditors be authorized to balance all these accounts shown as owing where the books show they have been charged an amount over the full fee of fifty dollars. Carried.

Moved by Dr. Woodbury, seconded by Dr. Bagnall, that the auditor's report be received and adopted. Carried.

Moved by Dr. Abbott, seconded by Dr. Magee, that the special summer course now being given by the R.C.D.S. for the purpose of allowing the students in that institution to qualify for service in the C.A.D.A. be recognized by the D.D.C. as a regular course for the purposes of the

D.D.C. A vote being taken by the Provinces resulted as follows: P.E.I., yes; N.S., yes; N.B., yes; Ont., yes; Sask., yes; Alberta, yes.

Motion carried unanimously.

Moved by Dr. Woodbury, seconded by Dr. Bagnall, that as a special war measure the secretary be instructed to communicate with the secretary of the R.C.D.S. and find out how many students wish to take the D.D.C. exam. this fall under the last-mentioned resolution, and if enough agree to take the exam. to pay expenses, he be authorized to hold same. Carried.

Vote by Provinces: P.E.I., yes; N.S., yes; N.B., yes; Ont., yes; Man., yes; Sask., yes; Alta., yes.

Carried unanimously.

Meeting adjourned.

Meeting of the Dominion Dental Council held in Laval University Dental School, Sept. 11th, 1916, at 8 p.m.

Present: Drs. Doyle, Bagnall, Woodbury, Magee, Abbott, Cowan, Bush. President in chair.

Minutes read and adopted.

Moved by Dr. Woodbury, seconded by Dr. Magee, that when extraordinary expenditure not authorized by the Council is to be made between sessions, the vote of all members of the Council shall be taken. Five members voting in the affirmative shall authorize the expenditure, and that this be made a standing order in a book provided for the purpose. Carried.

The election of officers was then called, and resulted as follows:

President—Dr. J. S. Bagnall, Charlottetown, P.E.I.

1st Vice-President—Dr. H. R. Abbott, London, Ont.

2nd Vice-President—Dr. Geo. F. Bush, Winnipeg, Man.

Secretary-Treasurer—Dr. W. D. Cowan, Regina, Sask.

Meeting adjourned.

Minutes of meeting of D.D.C. held in Laval University Dental School, Sept. 13th, 1916, 10 a.m.

Present: Drs. Doyle, Woodbury, Bush, Bagnall, Abbott, and Cowan. Dr. Doyle, President, in chair.

Minutes of the previous meeting were read and adopted.

Moved by Dr. Abbott, seconded by Dr. Woodbury, that a vote of thanks be tendered the Laval University for their kindness in giving us the use of their school for meeting purposes. Carried.

Moved by Dr. Abbott, seconded by Dr. Woodbury, that we express our most sincere regret at the loss by death of Dr. J. B. Willmott, and that the secretary be instructed to draft a letter expressing our regret and appreciation of the work of Dr. Willmott to the family. Carried.

Moved by Dr. Woodbury, seconded by Dr. Abbott, that a vote of thanks be tendered to the President and Secretary-Treasurer for the services they have given to the D.D.C. Carried.

(Sgd.) E. M. DOYLE, President.
W. D. COWAN, Secretary.

TORONTO DENTAL SOCIETY

FOREWORD.

The Executive of the Toronto Dental Society desires to announce a programme for the coming season which it believes will meet with the approval of the members. It has been the aim of the Executive to secure leading men in the profession who are quite capable of discussing some of the subjects which are most perplexing to the conscientious dentist desirous of rendering his best service to his patients.

Dr. R. Ottolengui, of New York, who needs no introduction to the Toronto Dental Society, will be with us on Monday evening, December 4th. His topic will be the old, yet ever-troublesome, subject of root canals, their treatment and filling. This will be illustrated by numerous lantern slides.

The dates for the remaining meetings have not yet been definitely arranged, but Dr. James P. Ruyl, of New York, whose prosthetic work attracted special attention at the National Dental Meeting at Louisville last July, has promised to present an essay at our January meeting on "The Surgical Treatment of Abnormal Edentulous Mouths Before Inserting Dentures in Order to Restore Natural Expression."

In February, Dr. J. Leon Williams, New York, of Trubyte fame, has assured us that he has something new for us in the "Evolution of Human Teeth," with special reference to their masticating surfaces. For those who are endeavoring to make their restorations as nearly normal as possible, this subject should prove both interesting and educative.

The meetings will be held, as previously, at the Carls-Rite Hotel. Although the hotel management has improved the standard of its service considerably, thus necessitating increased prices, the Executive has been able to secure the improved service for its members at rates still within our means. Dinner will be served at six-thirty.

There will be no special rates for Toronto dentists who wish to attend other than the full number of meetings.

Tickets will be mailed in the course of a few days to all members in good standing last year.

E. F. ARNOLD,
President.

R. D. THORNTON,
312 Roncesvalles Ave.,
Secretary.

DENTISTS IN ATTENDANCE AT THE CANADIAN DENTAL ASSOCIATION, MONTREAL SEPTEMBER, 1916

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AN APPRECIATION

The following appreciation from a prominent member of the dental profession in Ontario speaks for itself:

"Dear Dr. Webster:

"I wish to congratulate you for your effort in the September issue of the 'Dominion Dental Journal.' It is the best individual number of any dental magazine that it has been my pleasure to read. Here's wishing you good luck in many more."



Dentists in Attendance at the Convention of the Canadian Dental Association, Montreal, 1916.

Dominion Dental Journal

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should be addressed to the **DOMINION DENTAL JOURNAL**,
Richmond and Sheppard Streets, Toronto, Ontario.

VOL. XXVIII. TORONTO, NOVEMBER 15, 1916.

No. 11.

MALPRACTICE SUITS

The dental profession is coming into prominence because of the nature of the operations they are called upon to perform. Anaesthetics are administered, both major and minor surgical operations are performed. The consequences of dental operations have recently been shown to have far-reaching effects on the general health. Failure to accomplish certain results is sometimes looked upon as a cause of action for malpractice. The more valuable dental services become, the greater the responsibilities of the dentist, and the greater the consequences if a mistake is made.

There have been very few direct actions for malpractice in dentistry in Canada. Since there are so few, they are of great value as precedents. Many cases, in fact nearly all cases, in law are decided on precedent. Hence the necessity of having proper precedents. Every dentist is vitally interested in every action for malpractice brought against a dentist. No dentist is free from a suit for malpractice. Most of them are in the nature of blackmail, because the plaintiff knows that a professional man can ill afford to be even accused of malpractice. Very often our professional

brethren are a party to an action for damages. A physician may be called in to treat a patient who has been in the hands of a dentist, and he allows the patient to think that he might get damages from the dentist. An action is entered with the hope that a settlement will be reached without going to court.

There have been actions against dentists for extracting the wrong tooth, allowing a tooth to fall into a patient's throat, fracture of the jaw, and suffering caused by the carelessness of the dentist. Several cases have been settled in which the dentist has been accused of infecting the patient. It is of vital importance that no case of this kind be allowed to go to trial in Canada without a full marshalling of the facts in the matter. It may be expected before long to have actions brought against dentists for having caused rheumatism, cardiac lesions, and all sorts of diseases, by their operations on the teeth. What will the answer be? Dentists accused will have to show that they followed the regular prescribed practice and exhibited average skill, permitting no carelessness.

In Great Britain there is a Dental Protective Association, as well as a Medical Protective Association.

In Canada there is a Medical Protective Association, with headquarters at Ottawa. A Dental Protective Association may have to be organized in Canada to protect dentists against improper attacks for malpractice. None of the organizations mentioned is under the auspices of an official body. They are voluntary bodies. It would be hazardous and impolitic for officially organized dental bodies to undertake the defence of dentists accused of malpractice. There isn't any doubt but all the profession are interested in the defeat of improper charges of malpractice, and yet official bodies dare not undertake the defence of such cases.

A Canadian Dental Protective Association might be formed, permitting those to join who paid an annual fee to cover the cost of prosecutions.

FOR SALE—One Dentist's Chair, in good condition, and cheap. The E. B. Eddy Co., Ltd., Hull, Canada.

FOR SALE—The Dental Practice of J. R. Duff, of Portage la Prairie, who was recently killed in France, and the equipment used in his office. For particulars apply to J. R. Colwill, Portage la Prairie, Man.

Dominion Dental Journal

VOL. XXVIII.

TORONTO, DECEMBER 15, 1916.

No. 12.

Original Communications

NECESSARY RESTORATION WITH CROWN AND BRIDGEWORK

ALBERT W. JARMAN, D.D.S., Philadelphia, Pa.

Read before the Canadian Dental Association, Montreal. September, 1916.

It is to be hoped by the practice of preventive dentistry the time will come when the word "restoration" will play a minor part in dental science. Perhaps the more general establishment of dental clinics, dental infirmaries in hospitals, dental inspection in public schools, large corporations and institutions will result in the general education of the people to the importance of preventive dentistry. There will be no loss of teeth, hence no need for plates, crowns and bridges or any mechanical restorations.

However, in our profession, we are facing the present-day practical side of things rather than being idealists. I know we all look forward to the time when with dental education so improved and dental care so well appreciated by the public, we will have no concern whatever except to inspect and prevent rather than to restore. There will be many generations born before this realization of our fondest dreams can be possible. At present we must deal with neglect on the part of the patient, and many times errors in judgment from the dental practitioner. Errors due to an attempt at conservation, unknowingly allowing bites to close through need of substantial crown and bridgework, resulting in the loss of many, if not all, the teeth through the condition popularly known as pyorrhea or Riggs' disease.

SPECIALTIES IN DENTISTRY.

Dentistry is a specialty of medicine, and when sub-divided we find many of the dental specialties are directly dependent upon general dentistry.

In crown and bridgework we find a specialty which is so dependent upon general dentistry that the specialist must employ all the principles of dentistry for the successful practice. We, therefore, are not surprised at the fact that, although men are willing to leave cases in orthodontia to the orthodontist, oral surgery to the oral surgeon, pyorrhea to the pyorrhea specialists; with comparatively few exceptions, all take a hand at making, or at least placing, crown and bridgework in the mouths of their patients.

It cannot be denied that a man who is thinking and planning crown and bridgework, and seeing hundreds of cases, is in better shape to meet the complicated problems which arise in this specialty than one who has not developed his thoughts along these lines.

Crown and bridgework, from the time of its inception into dentistry, has been a breadwinner to the dental practitioner. In view of the fact that years ago, and to the present day, a feeling exists among our patients that if gold restorations are placed in their mouths, they are to pay for it, whereas labor spent in root canal work and careful preparation of abutments is often viewed by them as a waste of time. The public has an idea that as a profession dentists have standardized the crown and also the bridge, and if they go to any practitioner of dentistry who is licensed to practice, he must of necessity be able to do good crown and bridgework in a manner satisfactory in any case.

Taking advantage of these facts, the commercialists of our profession have made great money by giving patients anything they seek, regardless of their responsibility as dental advisers. They say, "Give the people what they want." Good salesmanship, but a poor way to practice a profession.

PLAUSIBLE DEDUCTIONS BY THE PATIENTS.

Patients in general look at a hasty restoration as being a matter that the operator is more skillful when able to place a piece of work in shorter time than one who would be painstaking and thorough in the preparation for a lasting form of crown and bridgework, therefore, the men who want to *make money out of dentistry with the mass of patients*, can do better by making a grade of crown and bridgework which does not require any treating of the teeth or trimming of abutments, but simply something which can be slipped into place and looks like a restoration. It matters not if it lasts only a few years. The patients may at that time have entirely forgotten the price they paid for it, and view it like a suit of clothes that has worn out and should be renewed. How often we find molar and bicuspid crowns with simply a thin piece of gold forming the masticating surface as a cusp, which, when worn through, the patients are very happy to brag that they have a heavy bite. They are perfectly willing to return to the dentist and have a filling inserted in the worn portion, and, furthermore, pay for the filling. Thus patients will invariably help the commercial side along if allowed the opportunity; and a cheap grade of crown and bridgework is a greater profit-maker to a practitioner than the better work, although all dentists know down deep in their hearts that better crown and bridgework, more expensive at first cost, is more lasting and practical for the patient.

CROWN AND BRIDGEWORK IDEAL RESTORATION.

It is quite natural for men of prominence in medicine and dentistry, who have seen many failures in attempts at restoration, and the complications arising from the same, to say that crown and bridgework is the bugbear of

dentistry. We cannot blame, but heartily commend the educators who condemn the kind of work they criticize. We do say, however, that satisfactory crown and bridgework is possible, and certainly necessary to make restorations which come the nearest to the normal teeth in practical use and appearance. What other means can be employed? Partial plates cannot do as well. In partial loss of teeth, restorations must be made, or the remaining teeth, and, in fact, the entire masticating apparatus, suffer.

It is possible by means of good crown and bridgework to make a restoration which the most critical must commend if a thorough study is made of the case with sufficient skill and knowledge of this specialty.

FAILURES—LACK OF PREPARATION.

Many failures are due to pathological conditions of the pulps, which give trouble after wearing of bridges and crowns; abscesses, acute and chronic, putrescent pulps, secondary dentin, pulp stones, and even faulty root-canal work, when attempted at all. A matter of equal importance to those I have just mentioned is the proper trimming of abutments, a most necessary part of the work, which unfortunately requires considerable time and energy, but the foundation should be prepared with such care that the completed work will fit without irritation, and thus carry with it the spirit of permanency.

In view of the fact that the crown and bridgework is necessary in dentistry, let us consider some of the conditions which make its practice so varied, and then try to arrive at a definite plan, recognizing staid principles which will give definite results, thus making possible practical crown and bridgework.

SYSTEMS OF CROWN AND BRIDGEWORK.

It is not as necessary to standardize crown and bridgework by any particular method or system as to attain the definite results which must be accomplished. By system we might term the particular general methods followed by a practitioner or a class of practitioners, differing somewhat from ideas employed by another class. For example, those who are enthusiastic over porcelain, and apply it entirely in their crown and bridge restorations; those who are enthusiastic over gold and depend upon it; the class of practitioners who want to do all their work in this specialty by means of fixed bridgework; those who desire to use removable bridges to the exclusion of all others; those of the profession who prefer to do all their bridgework without removing the pulps and doing as little work in grinding or preparation as possible; the gold inlay followers, with the gold inlay system of crown and bridgework, and we should also include other practitioners who prefer to use a variety of small plates which are sometimes termed bridges; namely, restoration of spaces caused by missing teeth, with small plates containing clasps which cling to the natural teeth, and so we might enumerate many other methods which are followed by the different classes of prac-

tioners. Each particular system doubtless possesses merits worthy of consideration by all.

The advocate of each system oftentimes may think his system is right and the others are wrong. In dentistry, we are likewise confronted with the whims and fancies which take possession of our various specialists, and in general we find dental men following one system or another zealously as they should a religion. As a profession we are given to enthusiasm, to inspirations that come to us from time to time under the influence of which we are wafted onward until we come to an awakening of the limitations of the particular method which has occupied our entire thought and we come down to a practical application of its value to our everyday work, and can then consider the fact that perhaps other methods possess some virtues after all.

It has often been remarked that the pendulum never swings normal in any new method, idea or fad that comes before the profession. We are all enthusiastic over it and try to apply it everywhere and to everything. If we haven't the fever at first we must catch it sooner or later. The pendulum swings way past its mark in the enthusiasm of a method, which is being courted by the profession, and then having run its course, like arresting the progress of a disease the pulse rate gradually returns to normal, at which time we appreciate the limitations of the usefulness of our new idea and govern ourselves accordingly. Many times have we been disappointed in awakening to the realization that a new idea which we have faithfully tried to apply does not cure everything nor fulfill all the requirements. Let us, therefore, try to remain normal in our enthusiasm, view the problems of crown and bridgework and their solutions in a general way, and abolish the thought of following any particular system of crown and bridgework to the exclusion of all others.

ERRORS IN JUDGMENT.

Bridgework is generally followed with the idea of restoring a space with a bridge to substitute for the natural teeth which have been lost, the general condition of the mouth and restoring the general masticating area seldom receives the proper consideration. This oversight is probably a source of more trouble than any other, and can be avoided if we direct our attention to the importance of the careful study or examination of the mouth preparatory to beginning the work. Articulated plaster casts will often be of great service in determining the amount and character of restorations necessary.

BUSINESS REASONS PLAY THEIR PART TO HINDER.

The old-established custom of charging so much per tooth has probably had considerable to do with this space filling mania. This general condition of charging so much per tooth and so much for filling has done much to keep the practice of dentistry upon the common basis in which people in a

community will come in and tell you how much a certain Doctor charges per tooth and they will try to figure out in their own mouths what a piece would cost them and try to force you to a commercial basis, a privilege they should not take without knowledge of the anatomy of the mouth, and the difficulty in the manufacture of the particular kind of piece they require, problems arising from the condition of the bite, treatment of abutments and also pathological conditions which may exist. All of which enter materially in computing the amount of time and skill necessary in completing any case of crown and bridgework, hence what would seem to be regular becomes irregular charging, and the dentist would sometimes lose money in meeting the patient's figures by extra work thrown upon him in thoroughly doing his work, or the alternative, yield to the temptation of passing important details or inserting inferior work in order to meet the price which has been established regardless of conditions, and perhaps a very low rate at that, which adds to the seriousness of the situation. The public cannot be blamed for following the pace set for it, and the practitioners following such a rule cannot have any desire to do a better grade of work: remedy—let the local dentists get together and stamp out the custom of charging an established low rate per tooth for crown and bridgework, which is ruinous to the practice because it ties the hands of many men who desire to do a better grade of work, but cannot stand alone and they are too proud to fight. Patients, if educated to better work, for more money, when its value is understood, will readily assist the profession in raising the standard of crown and bridgework with equal energy to that they now display in advertising the local rate per tooth for crown and bridgework.

LABORATORY SIDE.

The mechanical or laboratory side of crown and bridgework appeals to many without any consideration of the operative side. Numerous laboratories are in operation, and many dentists are sometimes willing to set in the mouth any kind of bridgework which may be made for them, regardless of the proper fit and accurate abutment preparation, which are the requirements necessary for success from the operative standpoint, although in the same mouth you will find gold fillings, inlays and other dental work which they have executed in the best possible manner. It is not to be supposed that every dentist is enthusiastic over crown and bridgework, yet the fact that he is not enthusiastic never excuses him from the duty of advising the necessary restorations in the mouths of his patients. Careful consideration of the general principles of dentistry as applied to successful crown and bridgework is essential for all who desire to practice this specialty.

COMPARISON WITH OTHER SPECIALTIES: BUSINESS REASONS.

The specialty of Orthodontia has become so well known that we recognize the men who can make the best regulations in this specialty. He can do so by having studied his subject, by thinking Orthodontia,

living in an atmosphere of Orthodontia and applying the principles which will bring the general results desired. By uniting and working together, specialists on Orthodontia have brought their subject before the public to the degree that parents are quite willing and ready to make almost any sacrifice to have a child's teeth regulated so as to prevent future facial disfigurement.

A business side of Orthodontia has been established making it possible to compensate the Orthodontist and enable him to specialize in this work, by requiring a sufficient fee at the beginning of the work which at once engages the assistance of the parents and guardians to force the child to continue the treatment, whereas many a practitioner of Orthodontia who did not follow this plan of charging in years gone by, had to confront the problem of the parents removing the appliances from the mouths, or of the treatment discontinued because it annoyed the little patients. So you see the business side has done much to develop the specialty of Orthodontia and to make the amount of fees sufficient to compensate the specialist. This is not a criticism, but a desire to commend the Orthodontists upon the work they are doing and thus we can profit by the example they have set in the thousands of successful restorations they have made. As a parallel in dental practice, crown and bridge workers make similar restorations to perform mastication for our adults in dentistry more than the children, and successful practice is attained by following similar principles, and in restoring the very often encountered closed bite to normal. The completed occlusion is obtained by means of crowns and bridges instead of moving the natural teeth as in Orthodontia. We construct and thereby enjoy the special advantage in time of completion which is almost directly dependent upon the time necessary for manufacture of the bridges in the laboratory, whereas in Orthodontia time is more uncertain. Orthodontists have been able to educate the people to the necessity for the regulation of the teeth of their children, why isn't it possible to educate adults to the consideration of their masticating surfaces and the importance of proper restoration, thus prevent Pyorrhea and the loss of their teeth?

SELF-DENIAL OR ECONOMY.

We are brought face to face daily with conditions where the father and mother are willing to make any sacrifice for restoration or regulation of the children's teeth by the Orthodontist, yet in their own mouths you will find the loss of many teeth is causing them serious discomfort due to the limited masticating surface. The bite closes and if the teeth spread, facial expression is altered, even worse than this the threatened loss of their entire teeth by mechanical means, yet even with this explained they are unwilling to pay a sufficient sum of money to have the necessary restorations by means of suitable crown and bridgework. They are perfectly willing to drift along while anterior teeth remain in sufficient numbers and hence they suffer no apparent disfigurement. These patients are also willing to allow the fact

of their not being able to masticate because of missing bicuspid or molars to remain secret with them until such a time, and the time must come, when the front teeth either loosen, wear down, protrude or spread through loss of molar and bicuspid support, the condition known as the closing of the bite. Even these manifestations do not always awaken patients to a consideration of their teeth until they arrive at a point where they have lost centrals, laterals or cuspids, at which time they present themselves to the dentist and request merely the restoration of the anterior tooth or teeth.

IMPORTANT EDUCATION OF PATIENT.

The fact that patients ask for the restoration of anterior teeth only, is by no means an excuse for a dentist to place crowns or bridges in the front of the mouth until any missing molars and bicuspid have been restored. Much crown and bridgework is attempted without such consideration.

The term "Restoration" with crown and bridgework should mean restoration with the object of perfecting the entire occlusion. Time must be taken to thoroughly convince the patient of the reason crown and bridgework should be made for them, and it should be remembered that the patient is not a dental graduate. The importance of good mastication to the individual cannot be too strongly emphasized. An estimate of the cost of crown and bridgework should always be given to guard against misunderstandings and the fee must of necessity be sufficient to compensate. In many cases it will be important to explain why the loosening of teeth (the condition known as Pyorrhea) often has its origin from failure to restore molar and bicuspid masticating surfaces at the proper time. The individual teeth affected had the origin of their downfall from an unequal distribution of forces during the process of mastication.

The pericementum is kept in a continued state of inflammation, finally yielding in its lowered state of vitality and loss of resisting power, to infection, suppuration and unless rescued in time the tooth is lost forever.

Patients may say "What has this to do with restorations in bridge-work?" Large cases can rarely be considered without involving these principles. In bridgework the foundations or abutments must have sufficient consideration. Adjoining teeth are even of importance as to firmness, therefore, it is of great importance in examinations of mouths to determine the useful teeth and eliminate those which cannot be considered.

It is important to emphasize enough of the general principles of crown and bridgework that our patients can see the reason for the restoring of masticating surfaces and the protection of the incisor teeth. Facial restoration is also accomplished by opening the bite which in many cases you will find closed through loss of teeth or wearing down of the tooth surface, resulting from partial loss of occlusion of the molars and bicuspid.

Sufficient time must be spent upon the examination to thoroughly

acquaint the patients with these facts which if accomplished will do considerable toward gaining co-operation during the work about to be undertaken, eliminating the asking of many questions and preventing misunderstandings.

PRINCIPLES INVOLVING SELECTION OF BRIDGES.

To the dentist the importance of examination cannot be too strongly emphasized. It makes no difference what system of work he may follow in making his bridges, the general principles of crown and bridgework are the same. He must be able to see from his examination the exact restoration necessary. He must be able to tell the patient the kind of work that should be placed in the mouth, why it should be done; he must be able to follow out in his mind the building of each piece, why it should be built in a particular way required for an individual case.

MECHANICAL PRINCIPLES OF PYORRHEA TREATMENT.

If the teeth are affected with Pyorrhea, we must know something about Pyorrhea or at least the manner in which it makes itself evident and its limitations.

When all the teeth are present in cases of Pyorrhea and the bite is sufficiently open we may have no need for crown and bridgework in many such cases. Gold inlays in molars and bicuspid will suffice in opening or holding the bite to the degree necessary to restore molar and bicuspid masticating surfaces and thus protect and save the overworked and loosened anterior teeth, in other cases (with all teeth present) by simply grinding the anterior teeth, in many such cases grinding the lower incisors will be sufficient. When molars or bicuspid are missing there is no other way but by use of bridgework and in such cases you will often find a single molar bearing the entire strain of one side of the mouth, or a bicuspid in another case in similar condition, oftentimes leaning forward or backward into the space caused by missing teeth yielding gradually to the force of mastication until they become loosened. Under such conditions the life of the tooth will be shorter unless reclaimed by proper abutment preparation and the placing of a suitable bridge before it is too late.

Extension saddles are very necessary and supply a great need in restoration of masticating area in cases where the ordinary bridges with an abutment on each end cannot be used.

Double saddles requiring the use of the lingual bar will be of great advantage in the lower jaw in restoring molars and bicuspid in all cases where all molars have been lost and the patient is wearing a full upper denture, also in cases where all the teeth in the lower jaw are missing save the six anteriors. A continuous lower double saddle can be used in cases where less than the six anterior teeth are present in the lower jaw, providing we have one cuspid remaining and the number of suitable teeth present for use is not less than five.

Removable bridges will be found of great advantage especially in

saddle work. Some of the advantages obtained by removable bridges are the proper care from a hygienic standpoint, opportunity for prophylaxis from the dentist's standpoint, taking care of the adjoining teeth, repairing the bridge in case of accident, adding to the bridge in case of necessity, being able to grind and adjust the bridge to accommodate the settling of the bite, and polishing same to its original finish, whereas in the case of a fixed bridge use of the lathe after setting would be an impossibility. The settling of the bite has proven to be an important factor in the life of bridgework. In bridges which have been worn for a time, although originally they were adjusted perfectly as to the contact between the gum and facing, a few years later the facing will be deeply embedded into the gum tissue. You can readily understand how, with a removable piece, this trimming or adjustment is easily possible. This condition referred to can often be seen in cases when the buccinator muscle attaches high on the alveolar ridges.

Fixed bridgework will be found of advantage in cases where the abutments are too frail or their attachments too limited to afford the removing and placing of a piece of bridgework. Abutments which have such limited attachments will be found to be short lived for bridges. However, when support is given a tooth which still has some attachment, it seems grateful for assistance, and sometimes lasts a great deal longer than we would expect. As a general rule a tooth which will rotate in its socket or give pain to downward pressure is of no value for crown and bridgework, and should be removed.

It is needless to say that the advantage of the X-ray at the present time gives us much light upon this subject, and as the profession is about launching into a deep sea of enthusiasm as far as X-ray examination is concerned, it stands without question that we will have better crown and bridgework due to the advanced knowledge we will receive through X-ray examination as to the condition of our prospective abutments.

CONDITIONS INVOLVING THE PERMANENCY OF BRIDGES, OR BETTER SPEAKING, THE LIFE OF THE BRIDGES.

He must be able to look beyond the mere matter of a year or two and look sufficiently into the future to be able to pass judgment for the selection of a proper kind of abutment for his bridges and also the proper kind of bridges for the abutments. He must be able to consider the strength of the teeth and the amount of strain placed upon them, to know whether they can stand the strain he expected and in cases where the pressure cannot come straight upon the abutments, he must be able to understand the principles and use of saddle work, whereby the alveolar arch may be called into play to stand the strain of mastication, which the abutments are unable to withstand alone. All pries or leverage must be avoided by careful consideration of the forces which will be applied to a bridge when in position for use by the patient, which can be readily calculated by considering the line-up of an individual case. With that same idea in view

(preventing leverage) the dipping down of occluding teeth into bridges must be avoided. Occlusion in bridgework as well as in normal must be in harmony with the path of the condyle in its movements of mastication. The dipping down of the teeth below this line will not only throw extra strain upon your bridge but lock the occlusion, preventing lateral and forward movements, and although lateral motion is prohibited under the conditions, the tendency of the patients to attempt lateral and forward movements of the lower jaw causes a surging strain upon the teeth involved and must result in loosening and finally their loss. To correct such a condition we should anticipate its possibility in our first examination, even though the removal of the pulp and crowning may be necessary from the amount of grinding we are forced to do.

The patient naturally objects to having the teeth ground so as to establish the normal occlusion, regardless of the fact that under such circumstances it might be truly said "He who saves his tooth structure shall lose his teeth."

The comfort of the mouth depends largely upon the restoring and maintaining of the normal occlusion and thus protecting the pericementum of each abutment. The assistance by practicing Oral Prophylaxis, especially in cases where there is a partial destruction of this member, will be of utmost importance. In fact in all cases of bridgework our vigilance cannot cease upon the completion of our work in inserting the crown or bridge; Oral Prophylaxis should be practiced by seeing the patient at least once in six months.

A FEW RULES TO BE FOLLOWED IN CONSTRUCTION.

Never try to make a bridge with one abutment only.

As a rule it is best to construct a lower bridge first when the case involves the construction of an upper and a lower bridge upon the same side of the mouth. Even if on opposite sides it is best then to construct the lower first as by so doing you can hold the weight of the bite upon the lower bridge, then construct the upper in accordance with the distance already established.

Always have a definite plan for constructing several bridges in one mouth so that the entire restoration will be harmonious.

Therefore, we can say truly that the importance of crown and bridge-work in this day of preventive dentistry is more to be considered than ever before. It enables us to make such restorations as to properly even up or balance the bite, makes mastication and movements in mastication possible by giving as near to the normal conditions as is possible to restore by artificial means.

SOME PHASES OF PERIODONTAL SEPTIC INFECTION

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Read before the Canadian Dental Association, Montreal. September, 1916.

Not very long ago—just a few years since—dentists found it almost impossible to convince the public, or in fact the medical profession, that dentistry or oral conditions had anything to do with the health. Fortunately there were a few exceptions scattered throughout the country. In the old country, as our friend, Dr. Thornton, would say: "they saw the vision" much earlier than it was seen here, and oral sepsis became a live subject in medical and dental circles, and to-day has lost none of its interest. The dentists of England, and particularly of London, deserve the gratitude and approbation of the world for their part in promulgating the knowledge and doctrine necessary for furthering this teaching. As was to be expected when the medical profession realized the benefits of eliminating oral foci in certain cases, they very soon went to extremes, and we are having in this country to-day a little of that same experience, the pendulum is swinging too far—steady it. We are going to deal in this paper very briefly, it is true, with one phase of oral sepsis, namely, dental periclasia, commonly called maxillary pyorrhea alveolaris, and we will deal principally, though not entirely with the suppurative variety. To what extent is periclasia responsible for general septic infection?

In your practice you will have physicians sending patients to you asking you to extract all of their teeth because they have the condition which their physician calls pyorrhea. Every dentist has had this occur more than once, and will undoubtedly again. Pyorrhea alveolaris, or rather periclasia, is blamed for a great deal that it is not responsible for, and it is our business, yours and mine, to say where and when periclasia may or may not be the cause of constitutional complications. If you go into a factory or any gathering of working people, the majority of them have unhealthy gums, red, often swollen, the teeth dirty and covered with deposits, and yet if their teeth are not decayed those people are, as a rule, healthy. If disease is always concurrent with deposits on the teeth, how are these people alive? Any man who has lived in a farming district knows that thousands of farmers never buy a tooth brush, much less use it, nevertheless farmers are not such an unhealthy lot; when their teeth decay they have them extracted, so that often when they get to middle age they have not enough teeth left for proper mastication, then, of course, we have far reaching consequences, but while the disease is progressing they are not in the debilitated condition you would think they should be. But, gentlemen, notwithstanding the fact that we believe the foregoing to be true and observe it every day of our lives, we must not forget that there are forms

and periods of gum infection, forms and periods of dental periclasia which cause serious bodily harm, cause cripples and even death. Therefore, the study of this subject becomes exceedingly interesting.

I have noticed in my practice that there are two stages of the disease in which one is apt to get a general infection as the result—the first stage is the initial stage or the beginning, that is at the time when the gum becomes affected at the gingival margin and we have a simple gingivitis. The mucous membrane of the mouth is a protection against the invasion of micro-organisms and the gingival trough is lined with mucous membrane, but if that lining be broken by chemicals, traumatism or otherwise, you immediately establish a method of ingress for septic material. When we were in Minneapolis at the Dental Teachers' convention last January, Dr. Hartzell exhibited a slide made from a case of gingivitis, which clearly demonstrated the fact that in that case the blood vessels were open and exposed to all the material found in the gingival trough. Seeing a slide like that and not having examined a slide made from the disease as it progressed, might readily lead us astray and give rise to the erroneous statements which we sometimes are tempted to make, asserting that in an extensive case of suppurative periclasia we have an absorbing surface of six, eight, and as high as twelve square inches in the mouth. Why, gentlemen, if those individuals spoken of earlier, had that amount of absorbing surface anywhere in the body they would necessarily bear a charmed life. What happens? Suppose the skin were broken in any other part of the body what would happen? Immediately the epithelial tissue would make an endeavor to cover the break. Mucous membrane is composed of epithelial cells; why not suppose that they would do the same thing and that you would have the mucous membrane following the pocket down and leaving only a small portion of it unprotected and into that portion nature pours her protecting leucocytes, so that after the initial stage of gingivitis nature's efforts to form cicatricial tissue, the extension of the mucous membrane and the protecting cells of the blood take care to a very great extent of the otherwise very serious oral lesions. The more slowly the disease progresses the more nearly complete the protection. But unfortunately in some cases the process is rapid and the protecting wall does not extend to the bottom of the pockets; as a consequence when you explore you will find the bone unprotected and a perfect absorbing surface, this, of course, will only happen on a few teeth at a time, generally on two or three. When this condition arises you are almost sure to get a general septic infection. I have never to my knowledge seen a case of this kind where the patient remained in good health if the conditions were allowed to remain for a prolonged time. Therefore, there are two stages, the initial and the advanced stages, in which under certain circumstances, we are very apt to have general septic infection as the result of suppurative periclasia. There is also another fact that we must not lose

sight of, namely, that as pus pockets in the mouth are not the normal condition, so there may be and almost certainly there are pathogenic germs propagated there, which by their pathogenicity are likely to have a deleterious effect in the intestinal canal and the deeper the pocket the greater the number and the more virulent the germs are likely to be. As regards cases proving the connection between periclasia and general debility, I will just speak of four. About four years ago a man came to me sent by a physician in Toronto. His own physician had told him he would have to give up business for a year and he might never be able to go back to business again. I treated his gums, beginning in this case by getting rid of all the germs possible by flushing the pockets and flooding with an antiseptic; in a few days he was a great deal better; inside of two months—having had every tooth treated—he was quite well, and is now a very prosperous, healthy individual.

A young lady presented herself complaining that she was afflicted with rheumatism, not knowing whether the mouth infection was the cause of the trouble or not. I was careful not to promise much. I treated her teeth and she immediately got rid of the rheumatism; this occurred three years ago, she was in my office about three weeks ago, her rheumatism was coming back, we made X-rays of her teeth and found one molar septic, I had that tooth extracted and she reports she has no more rheumatism. This was a case where there were two sources of trouble producing the same effect.

Vaccine Treatment.—A short time ago we were injecting vaccine, as an adjunct in the treatment of periclasia, but there was always the question as to whether we had the proper organism or not. In speaking to Dr. Hartzell about the subject, he said: "Why not use vaccines manufactured by nature?" I believe we all do most of the time, though we do not go at it designedly, as he has done. Here is a case to illustrate: A physician came to me suffering from rheumatism, he walked with two crutches, he had quite an extensive case of suppurative periclasia which he wanted me to treat, and I treated it in such a way that I caused in a circumscribed area more absorption than he was already getting, when I got through a pocket it was clean and healthy and it healed. In two weeks he was walking with but one cane and he showed me he could walk across the floor without a cane. He then had his tonsils removed, but as he was well on his way to recovery, they were removed as a matter of precaution. I saw him on Friday last, and he asked me to go and play a game of golf with him, so he is apparently all right. There is just one more case which I am going to report, it is a case of neglected salivary calculus. Ordinarily salivary calculus has no deleterious effect on an individual further than the loss of his teeth. This we would expect if Dr. Black's theory has any foundation in fact, and his experiments go to show that it has. A physician

was called in to see a patient who had a persistent hacking cough, which, accompanied by a general breaking up, had put the patient in a weakened condition. After treating him for a short time without any result, the physician sent him to me. This man had about the dirtiest mouth you could see, salivary calculus of a comparatively soft variety, piled up on most of his teeth, and in that calculus filth. I removed the calculus and gave him instructions, which, by the way, I saw were carried out, and immediately he started to get better, the cough left him, and I have not heard of him since, all going to prove that there are certain cases responsible for constitutional complications, and certain cases which are not.

Goadby, in London, reported having cultured a streptobacillus from an oral pus pocket, which, when injected into animals, caused arthritis. Drs. Price, Hartzell, and their co-workers, are carrying on similar experiments with streptococci, and so the march goes on.

One of the best contributions on this subject which I have seen is by Dr. Logan, in "Items of Interest," December, 1915, entitled "Blood Findings in 162 Cases of Chronic Oral Infection Associated With the Teeth." In this paper, Dr. Logan demonstrated that we do not get leucocytosis as a rule from suppurative periclasia, and that often we have less white blood cells in the circulation than the average, and draws attention to the very great danger from periapical abscesses in comparison. Dr. Logan's investigations correspond with my experience, and help to corroborate statements made earlier in this paper, namely, that it is my experience in treating several thousands of patients suffering from dental periclasia (so-called pyorrhea) that there is not the enormous amount of absorbing surface which we might expect to find from a superficial examination in these cases—but my experience also tells me that this disease is a serious factor in the pathology of the nation, and it is not only our privilege, but our most sacred duty to use our best efforts to combat the evils of it with a view to eliminating it and its results, even at a sacrifice to ourselves. The question now arises as to the best method to treat this malady. In my experience there is only one way—remove all dead and foreign material, make as near as you can a surgically clean wound, and depend on nature to do the healing. To remove all dead and foreign material is sometimes very difficult, and a clinic is the only method by which we can adequately describe and demonstrate the procedure. The difficulty generally arises from the inaccessibility of parts of the pus pockets and the sensitiveness of the inflamed tissues. The inaccessibility is partly overcome by the shape of our instruments and our knowledge of the best way to use them. In my practice I have a set of instruments called the McDonagh periodontic instruments for my own use, but many operators might find it difficult to use them. Some would prefer the two point contact planing instrument, such as Hartzell's, Carr's, James's, etc.; other might like Logan Buckley sets, and so on. The whole secret is not so much in the instruments

as the ability to use an instrument, and the knowledge of what you want to do.

But one should have one full set of instruments of some man's design, who has been successful in treating the disease with that design. And one who has been successful has taken care not to scratch the root surfaces deeply so that he leaves an ugly, deep groove, but rather to leave the surfaces fairly, if not entirely, smooth and free from micro-organisms or shelters for organisms. When this is done, in the great majority of cases, we need absolutely no drugs or medicines, and when this is not done, drugs or medicines will give only temporary relief.

In chronic cases, when we find the root surface considerably softened, it is necessary to take a great amount of care in instrumentation, and often to use nitrate of silver. In patients who are afflicted with diabetes, in young children, in the very old, and in many other special cases, we have to deviate a little in our treatment, but this paper cannot treat of those special cases, and doubt if you would get enough out of it to repay you even if we had time, because cases which require different treatment to that which I have outlined are rare. Thank you, gentlemen, for your kind attention.

ROOT CANAL TREATMENT

RODRIGUES OTTOLENGUI, D.D.S., New York.

Read before Toronto Dental Society, December, 1916.

Perhaps the most potent problem which confronts the dental world to-day is the problem of correctly treating and filling root canals. This problem, of course, has always been before the profession as a vital issue, but it is more vital than ever. It is a problem that never has been solved, and has not yet been solved, but the solution is nearer than ever.

At the outset let me declare that I am not posing as one who can fill the canals of all teeth to their apices; but I wish to present a technique with which I fill more canals to their apices this year than I did last year; and with which, through practice, I expect to be able to obtain a greater proportion of success as the years go by. It is a technique, too, with which, when a canal is filled to its apex, we may feel reasonably sure that it will not become infected, if it had not been infected at the outset.

In regard to filling all roots to their ends, carping critics, such men as we always find standing as obstacles in the path of progress, men who invariably count as impossible the things they cannot themselves do; such men, I say are repeatedly approaching me at meetings to hand me some tooth with twisted or distorted roots with the half-sneering remark, "I presume that one would be easy for you."

Such arguments, if they prove anything at all, merely prove that there are teeth the canals of which are beyond human skill. Yet even some of these would be found surprisingly easy if treated in the mouth, for there be many tortuous canals that can be successfully managed, provided the operator does not himself block his channel with faulty instrumentation.

At all events, the most that we are obliged to admit is that there are some teeth which we cannot successfully treat. This is true of all surgical operations, and root canal work is a surgical operation, an operation demanding the most exacting and slavish obedience to routine. If we would but dismiss from our minds these impossible cases; if we would constantly say to ourselves, "Perhaps Dr. X—— could fill this root," soon, very soon we would find less roots that we must send over to Dr. X—— for treatment.

Root canal treatment may be divided into two distinct phases. The first includes all those cases that come to us uninfected, teeth having living pulps which, however, require removal. Second are those cases where infection has already supervened. These latter are to be subdivided into those that may be cured, those that are beyond cure, and those that might have been cured if some previous operator had not mutilated the canals with drills or broken instruments. My friends, let us beware of so treating teeth that when our patient appeals to a confrere he shall find the afflicted

tooth in this last class because of our maltreatment, mistreatment or misfortune. And let me inject here the comment that misfortunes, such as the breaking of instruments, may be minimized if constantly kept in mind as possible, so that the maximum of caution is observed.

Let us then briefly outline the technique of the management of these various conditions.

REMOVAL OF LIVING PULPS.

Where the pulp is alive at the outset, it is manifestly the duty of the operator to remove it without infecting the canal or apical tissues. This requires constant attention to aseptic and antiseptic precautions. In root canal work we cannot hope to make our dental asepsis equal to true surgical asepsis, but if we recognize the weak spots in our attempts at asepsis, we may fully protect the patient with germicidal or antiseptic agents. As for example, we cannot sterilize the entire mouth, but we can with fair certainty sterilize the immediate field of operation; we may then isolate this field with the rubber dam; and we can then again sterilize the included teeth and the dam itself.

Before removing a pulp, therefore, and the routine is the same in all canal treatment, the gums and four or five teeth should be thoroughly cleansed, using a disclosing solution to be sure that all plaques have been removed, and tapes with pumice or what I prefer, a fine silex, between the teeth. The parts are then to be thoroughly sprayed to make sure that no debris remains. Next use a cotton swab dipped in alcohol and rub the gum well, to remove all inspissated mucous. Finally coat the gums and teeth with tincture iodine, forcing the iodine under the gingival crevice with a sharpened orangewood blade. The rubber dam should be washed with a germicidal soap and boiled. After placing it so as to isolate four teeth at least, the surfaces of all teeth and of the dam itself should be swabbed with alcohol. This alcoholic swab may be repeated throughout the operation, especially when blood or seepage of any kind escapes from the canal and flows upon the dam or adjacent teeth.

ARSENIC.

Arsenic should never be used. I say never because there is practically no condition in which it is excusable. If pressure anesthesia should not prove effectual, we still have conductive anesthesia, as well as intra-osseous anesthesia. In extreme cases we may even use full anesthesia, for which purposes I have used nitrous oxide and oxygen, and even chloroform.

In ordinary cases, however, pressure anesthesia answers every purpose, provided the proper technique be employed and patience be exhibited. Operators frequently remove pulps, causing pain to the patient and a lessening respect for the method in the dentist's own mind, when one more three minutes' application of the anesthetic would have brought about a painless operation.

When the pulp is not actually exposed, but nevertheless must be removed, the exposure of the pulp may usually be accomplished with comparatively little pain, by the use of the chloride of ethyl spray followed by the utilization of large new sharp round burs. They should be new because, if never before used on teeth, they are less likely to be contaminated and may be rendered safe if dipped in alcohol and then set on fire two or three times, which occupies but a few seconds. The bur should be sharp because sharp burs cut with less jar, and therefore with less pain. They should be large and used with a lateral sweep so as to avoid dipping into the canal, thus stabbing the vital pulp. Just as soon as the minutest exposure is evidenced by the escape of a drop of blood, the anesthetic should be used.

PRESSURE ANESTHESIA.

A drop of sterile water is dropped on a clean sterile slab and one or two billets of neurocaine dropped into this. No effort should be made to dissolve the billet; it should merely be saturated. Such a billet is then picked up on a pledget of cotton, taken from a receptacle which is brought direct from the sterilizer, and with this the wet neurocaine is placed over the exposure. Observe that there is little or no water, hence the cavity is comparatively dry, an important matter. Next a mass of pure bee's wax is made slightly plastic and pressed into the cavity and over the cotton. Very light pressure is used at first, and the case is allowed to rest for half a minute. Then a large egg-shaped burnisher is placed upon the wax and slowly increasing pressure is made in the direction of the pulp. This may cause the patient to wince at first, but this shock soon subsides. When a burnisher can be forced quite through the wax, anesthesia is usually profound and pulp removal painless.

The procedure, of course, is not always as simple as here outlined, but success usually follows patience and repeated applications. It is because of this that a full hour should be set aside for this operation. It should not be hurried, because, once begun, it should never be partly completed and then left for the next day. Disaster almost always follows such a course.

PULP REMOVAL.

To remove a pulp use the finest barbed broach procurable. Turn the barbs towards one wall of the canal and endeavor to slip the broach between the pulp and the canal wall as far as possible. Then turn it around once and slowly withdraw. The pulp in most cases will come away entire.

The removal of a pulp is commonly followed by a copious flow of blood. This should be encouraged, never checked with hemostatics. Either use paper canal points to invite the flow of blood or syringe out with warm sterile water. Allow the bleeding to cease naturally. This depletes the capillaries and renders secondary hemorrhage less likely.

SECONDARY HEMORRHAGE.

This secondary hemorrhage, however, is always a possibility, and if the canal be blocked with cotton charged with some oily drug, as is common practice, this resumption of bleeding causes an accumulation of blood about the apex, often inducing an acute pericementitis which may result in infection and abscess, a most disagreeable denouement where the patient originally presents with an uninfected tooth. It was such an instance in my own practice that caused me to abandon medicated dressings in root canals.

After pulp removal, I now dress the canal either with a dry sterile cotton dressing, or with a paper cone where the canal is large enough. The paper cone is more desirable where it can be used, because it is more easily kept sterile. The object of this dry dressing is to draw up into the canal by capillary attraction any blood that may seep from the capillaries after the tooth has been sealed up. This fortunately does not always occur, but let an operator try this method and some day, on the second visit, find his dressing saturated with blood, while the tooth itself has remained absolutely comfortable, and he must become convinced of its efficaciousness.

REMOVAL OF PULP TERMINALS.

Before passing from the subject of pulp removal, I must allude to one important particular. No one can tell by examination of a removed pulp whether the pulp has come away entire or not. Quite often the main body of the pulp is torn away, leaving some pulp tissues still adherent at the apex. If this is left in till anesthesia subsides, it becomes one of the most painful conditions that I know of to handle at a subsequent sitting. It is essential, therefore, to make sure that no particle of pulp is left. This can be accomplished by using an instrument known under the somewhat extraordinary name, "Apexographer." This is a very fine, smooth bristle with two or three barbs at the extreme point. Its use after the main portion of the pulp has been removed will often surprise the operator by the size of the fragment of pulp that will be brought away.

INFECTED TEETH.

We come now to infected teeth. If we know positively that an active abscess is present, there is no object in delaying treatment. I have frequently incubated material removed from the canals of such teeth, and also material collected from beyond the foramen, and invariably we find the same organisms. Where the pulp canal alone is infected, we should proceed more cautiously, and Buckley's method of introducing formo-cresol into the pulp chamber and sealing it in for twenty-four hours will often obviate the danger of forcing infected material into the apical area. However, I never saturate a dressing with formo-cresol and force it up into the canal. It is quite sufficiently effective placed lightly into the coronal end of the canal.

ALVEOLAR ABSCESS.

Of abscesses we have several varieties. The acute abscess, such as may result from sudden death of a pulp by trauma, with a rapid accretion of pus and considerable swelling, usually alarms the patient, but treatment is comparatively simple in most cases. An incision with a lance and dressing with iodoform gauze for two or three days will resolve the conditions to a state of quiescence, when the canal work may be done. If the latter is successfully accomplished, all traces of the abscess will disappear.

Chronic abscess is not so simple, and treatment and cure will depend upon the extent of the infection, and much may be learned from a radiograph.

Many claims are made that such conditions may be cured by ionization. I hope so, and am still endeavoring to learn how to accomplish it. Thus far, however, I have not been very successful. My experience has generally been that, upon opening the tooth and draining the abscess through the canal, the fistula may close, but even after repeated ionizations, upon filling the root canal and tooth, the fistula has reopened, showing that the abscess has persisted. The recourse then has been to root amputation, an operation in which every so-called "surgeon dentist" should become proficient. Otherwise he should erase the word "surgeon" from his cards and stationery.

I am quite aware that the above is contrary to the reported experience of other men. You need not, therefore, accept this as a fact. Quite possibly my technique has been faulty.

GRANULOMAS.

We come now to the much discussed abscess without fistula. It is very questionable in my mind whether this should longer be considered an abscess at all. Usually in these cases the radiograph shows a well-defined area of bone rarification, and if the tooth be extracted, we find at the apex a mass of soft tissue which years ago was called an abscess sac, but which now is spoken of as a granuloma. If the word sac conveys the idea of a tissue bag filled with pus, it is a misnomer. Except in the case of true cysts, these tumors are very solid. Whether they begin as a result of infection, or become infected subsequently, is another question open to discussion. That organisms can be isolated from these granulomas after extraction seems to be the common experience. Yet sections of granulomas, when stained for bacteria, have thus far defied our experimental research. That the organisms should abide solely at the periphery, thus making it possible to incubate them by merely dipping the extracted root end into bouillon seems extraordinary. As I said at the outset, this root canal question has not yet been fully studied out.

However, it is exactly these granulomatous cases that are said to be the most prolific causes of distant symptoms. Hence they must be cured,

eradicated, or the teeth extracted. Fortunately, ionization in these cases seems to be efficacious in many instances. At least, we have evidence, as I shall show you, of such conditions clearing up and giving place to growth of new bone, after ionization. Some say that these cases have been cured by ionization; others that they have cleared up as a result of the canal treatment.

It seems to me that the important point is that cure is possible. At present the burden of proof or disproof lies with the opponents of ionization, none of whom has as yet shown such radiographic evidence of cures effected, as have been presented by those using ionization. I am, therefore, inclined to the belief that there is much virtue in ionization for the cure of those cases where granulomas are present.

ROOT CANAL FILLING.

In all cases, of course, root canal filling entails the same technique. The main point to be secured is the hermetical sealing of the canal from end to end. Some tell us that we must fill to the end, but not beyond. Unfortunately, these men do not give us a technique that will accomplish this. Dr. Rhein and many others now believe that, unless the root canal filling passes slightly beyond the end, we can have no assurance that the foramen is sealed.

With this view I am in accord. At the same time, I also agree with those that argue that gutta percha is a foreign body, and however tolerant the tissues may be to gutta percha, these same tissues certainly can live in peace and comfort without such intrusion. Hence it is my endeavor to force a little chloropercha through the foramen, but to prevent the actual cone from protruding. In this manner we may accomplish the sealing of the foramen, or even the overflowing of the chloropercha over the end of the root where the cementum itself may be stripped off, but we avoid projecting a mass of gutta percha into the tissues beyond.

Perhaps the best method of preventing the protrusion of the cone is not to use a cone at all. Formerly I would cut off the extreme tip of a cone and gently force this to the end and into the chloropercha. The idea was that the chloropercha would absorb this tiny tip of the gutta percha cone, and actual protrusion would be prevented.

Nowadays I believe I have improved on this method. I have persuaded the S. S. White Co. to put up for us gutta percha points, not cone-shaped at all, but of equal diameter throughout. These are so fine that one might say they are cut from gutta percha wire, if you can imagine such a thing. Perhaps they may be called gutta percha rods.

The main fact is that they are so fine that they pass into very minute canals, and are quickly absorbed into the previously placed chloropercha, without danger of protruding one through the end, save, of course, where the foramen is abnormally large, in which case a different technique is requisite.

The method is to dry the canal with warm air. Then saturate it with eucalyptol, thus excluding air, and lubricating the canal at the same time. This is followed with chloropercha introduced with fine canal instruments and a pumping motion. I recommend those who have never done this to draw out some glass pipettes into attenuated simulations of root canals, and practise this introduction of the chloropercha. The transparency of the glass will permit the operator to watch the action of the chloropercha, and in this manner he will comprehend the technique better and will be less liable to force unnecessary quantities of the material through the end of the root.

Next the gutta percha rods are introduced, at first using perhaps but half a rod. As these rods are forced one after the other into the canal, they are slowly incorporated into the chloropercha, which at first being of the consistency of milk, let us say, soon becomes as thick as cream, then like a heavy oil, then like a melted tar, and finally stiffer and stiffer, until in the end we have changed the mass into a homogeneous whole, absolutely of the form of the canal and conforming with the canal walls.

Thus we do not fill a canal with chloropercha followed by a cone of gutta percha. But we pursue a method of gradually altering fluid or dissolved gutta percha into a solid mass, with no chloropercha left, and hence no shrinkage from evaporation possible.

At that stage when the gutta percha in the canal is of a tar-like consistency, no extreme force having been used up to this moment, a cone, which is not too large, may be forced into the canal and malleted home, upon which a slight oozing of the still slightly soft mass through the end of the root results in a sealing of the foramen without forcing an extra quantity of material through. The success of this will depend upon the deftness of the operator, but the results improve with practice.

Selections

A FEW INTERESTING CASES MET WITH IN HOSPITAL PRACTICE

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The graduate from the modern dental school has opportunities which his predecessor of a few years ago did not enjoy. Many of our largest hospitals and institutions that care for deformed individuals are appointing dental surgeons to their staffs.

It is only a matter of time, possibly of a few years, when all large hospitals in this country will open their doors to the dental intern. He will be as much a part of a large hospital as is the medical intern at present. The appointing of dental interns to general hospitals is one of the ways in which the dental profession can answer Dr. Mayo's query: "Will the dentists take the next great step in preventive medicine?"

The medical man who is well versed in his work is alive to the important place that dental surgery can play in general medicine and surgery. He has come to realize that many systemic disorders have their origin in the oral cavity, and he will look to the dental profession for aid in eradicating such diseases. It is therefore the duty of every practising dentist to be fully awake, and to grasp all the knowledge he can of general medicine, so as to be able to co-operate intelligently with the physician.

LACK OF PATHOLOGICAL KNOWLEDGE AND OF APPRECIATION OF ASEPSIS AMONG DENTISTS.

The lack of pathological knowledge and of the practice of asepsis in many dental practices is appalling. One of the best known surgeons in the city of Philadelphia, a man of international reputation, in speaking before the clinical society of this hospital, said: "The dentists as a class know very little about acute infections of the oral cavity, and less about asepsis." Some of the cases reported in this article will serve to furnish a justification of that statement.

The recent graduate in dentistry has as much to gain by taking an internship as has the medical graduate. To a large percentage of dental practitioners this will appear a rash statement, because their horizon of practice does not extend beyond the insertion of fillings, making plates, and apologizing to the science of extracting. The man who cannot make a reasonably correct diagnosis of a malignant condition in the oral cavity or associate parts is indeed a very poor representative of modern dental surgery. He will never command the respect of his brother the general surgeon. What a broad field presents itself to the everyday practitioner of

dentistry to combat malignancy! Instead of waiting to see whether a condition will become malignant, it should be eradicated while in the early stages. Many practitioners of dentistry boast that they never sterilize their instruments, and that they have never had an infection in all their years of experience. It would be of interest to know just how many people have been inoculated with syphilis by this class of practitioners. This is not an extreme theory, but a statement of cold facts, for cases have reported to this and other hospitals, suffering from syphilis, all evidences pointing toward the dentist as the disseminator.

A young man in the prime of life called at a dentist's office to have a tooth extracted. Four days afterward he died from Ludwig's angina. Is it necessary to sterilize extracting forceps? Practitioners who do not practice sterilization in the fullest meaning of the word are criminals; they are disseminators of disease, and therefore a menace to public welfare.

Baldwin, of Chicago, reports nine cases of syphilis contracted during dental operations, in two of which cases dentists themselves became infected through carelessness. Farther on in this article a case of syphilis contracted after extraction of a tooth will be recorded. Medical men are constantly berating the dental practitioner for his methods of treating alveolar abscesses. Why is it that so many dental practitioners refuse radical treatment of an acute alveolar abscess, which is undoubtedly a condition calling for surgical interference? When the surgeon decides that there is pus in a patient's abdomen, he does not hesitate to open into the abdominal cavity to remove the pus.

REPORT OF CASES.

Case I. The patient, a married woman, age forty-two, had always been healthy, and had raised a large family. She first complained of toothache in the lower left second molar. The following day her face became swollen, and she sought the advice and services of her family dentist. He refused to extract the tooth while it was in an abscessed condition, advising the patient to use hot packs to the face. This advice was followed at home until the patient became very ill, and the family physician was called, under whose care she remained for three days. The following morning she was brought to the hospital by ambulance as a private patient. Her condition on admission was as follows: Temperature 103 deg. F. The face was markedly swollen on the left side, the swelling extending down the neck and behind the ear. The scalp and forehead were edematous. The left eye was closed, and the lid puffed out to the level of the nose. The cheek was blue, and pitted on pressure. The jaws were tightly closed, and the patient complained of pain in the small of the back, and a severe headache.

The operation consisted in free multiple incisions of the face and neck, and the removal of the offending tooth. Drainage tubes were inserted in the neck, and hot saline applications made. The saline applications were

renewed every twenty minutes. Stimulation and continuous enteroclysis was given. The anaesthetic used was nitrous oxid and oxygen. For awhile the patient seemed to do well, but relapsed during the night, and died in the early morning.

Case II. The patient, female, age forty-four, was admitted on the same day as case I. The diagnosis was the same, with the exception that the abscess was on the right side of the face.

She first complained of pain in the lower right second molar. The following day her face began to swell. She used home remedies for two days, and then consulted a dentist. He refused to extract the tooth while it was in abscessed condition. On the fourth day she presented at the dental dispensary for treatment.

Condition on admission was as follows: The face was very much swollen on the right side, the swelling extending down the neck and behind the ear. The eye was closed, and the lid puffed. The face was just beginning to grow blue; at one spot it was very dark red. The cheek pitted slightly on pressure. The patient looked toxic, and had a temperature of 102.2 deg. F. The jaws held firmly together.

The operation was the same as in case I. Hot saline applications were made, and renewed every twenty minutes. Stimulation and continuous enteroclysis were given. The anaesthetic used was ether.

The patient was kept in bed for five days, during which time she was dressed twice daily. At the end of seven days she was discharged from the ward, and referred back to the dispensary for further treatment. She was treated daily, and, at the end of three weeks the incisions had healed entirely, and the false ankylosis was almost gone. When the patient was last seen, some two months after discharge from the dispensary, the result was most satisfactory, in that there was very little disfigurement of the face, and the temporo-mandibular articulation was almost perfect.

Case III. The patient, male, age nineteen, had always enjoyed good health. He had a tooth extracted under a local anaesthetic. Several hours afterward he suffered considerable pain in the region of the socket. This gradually spread until his throat was quite painful on swallowing. He applied at the hospital for relief. It was at first thought that he was suffering from a peritonsillar abscess on the right side, on which the tooth had been extracted.

The patient was admitted to the ward, and several attempts to locate pus in the tonsil were made, but without success. Ice packs were applied externally, and liquid food was given. The patient's temperature rose, and the following morning the floor of his mouth was edematous, his neck swollen, his respiration difficult, and an anxious look on his face. His breath was very offensive, and by the afternoon he had all the symptoms of Ludwig's angina. Incisions were made in the neck along the median line up into the mouth and in the submaxillary triangles, connecting with

the median incision. A slight amount of pus was found. Drainage tubes were inserted and flaxseed poultices applied continuously over the incisions. The ethyl chlorid spray applied locally was used as an anaesthetizing agent. Stimulants and continuous enteroclysis was given. The patient continued to grow worse; he had considerable difficulty in breathing, developed pneumonia, and died the following day.

Case IV. The patient, age thirty-three, father of three healthy children, had a carious tooth extracted at a "dental parlor." About a month afterward he noticed his gum becoming sore over the socket of the extracted tooth. He sought relief at the same "dental parlor," but in vain, and consequently applied to the dispensary of this hospital. On examination the sore on his gum had the appearance of a chancre. The cervical glands were enlarged on the same side. A Wasserman test was made, and found to be positive. The patient insisted that he had never had any venereal disease, hence it was natural to suppose that he had contracted syphilis in that dental parlor.

Case V. The patient, a boy of eight, developed an alveolar abscess of the lower left first molar. He was taken to a dentist, who refused to extract the tooth until the swelling had subsided. He, however, lanced the gum, but the pus was not in the gum tissue; it was in the jaw-bone. The child had considerable pain, and the swelling in the neck growing larger, he was, on the following day, taken to a physician, who advised the use of flaxseed poultices externally. After the second poultice the abscess broke on the face, just below the mental foramen. The physician irrigated the newly-formed sinus with hydrogen dioxid, and instructed the mother in the use of a small syringe charged with hydrogen dioxid, with which the sinus was to be washed out three times a day.

Under this treatment, together with salves to heal the sinus, the child grew worse; so after three months the mother brought the boy to the hospital for treatment.

The boy's condition on admission was as follows: The face was normal in size, with a large indented area containing a suppurating sinus on the left side below the mental foramen. Examination with the aid of a probe revealed necrotic bone, which the X-ray later confirmed. The sinus discharged a considerable amount of pus daily. Intra-oral examination showed the teeth in a neglected condition, and the lower left first molar badly broken down.

The operation consisted in opening, under ether anaesthesia, along the border of the mandible and exposing the necrotic bone, which extended back to the angle of the jaw. The tissue was dissected well back so as to give a good flap to expose the area over the sinus. The offending teeth were extracted.

The patient made an uneventful recovery, the wound healing nicely. Two months later a plastic operation was done to improve the appearance

of the patient. When seen several months afterward the result was most satisfactory.

Case VI. The patient, female, age twenty-two, had a carious lower left third molar extracted under local anaesthesia. The dentist prescribed as a mouth-wash hydrogen dioxid. The patient, having considerable pain in the socket, returned to the dentist for relief. He irrigated the socket with hydrogen dioxid, and instructed the patient to keep on using dioxid. Her face began to swell on the left side, and her jaws became somewhat ankylosed. Two days later, an osteopathic physician diagnosed her case as one of displacement of the cervical vertebra, and treated her three times accordingly. She then consulted a physician, who advised and opened the swelling at the angle of the jaw, obtaining a free flow of pus. The pus continued to drain for three weeks, when it was decided to operate and curet the jaw. This was done, but without satisfactory result. A month later she was operated on again, and the jaw was curetted. The pus, however, continued to flow, and became more vile in nature. The odor was so offensive that the patient refused to see any of her friends.

The patient's condition on admission was as follows: On the left side at the angle of the jaw a large sinus was present, surrounded by scar tissue. The odor was extremely offensive. The orifice of the sinus was about one-half inch in diameter. The patient looked anaemic, and some swelling was present at the angle. The flow of pus was yellowish green in nature and profuse. Examination intra-orally showed a small sinus over the region of the extracted third molar. On passing a probe into this sinus, a distinct gritty feeling was transmitted through the probe to the hand. Examination through the external sinus gave the same sensation. X-ray examination showed a large sequestrum extending from the angle into the ramus.

The operation consisted in thoroughly opening the skin and dissecting back the muscles, exposing the necrotic area. This was removed *en masse*, and the surrounding bone well curetted and irrigated with normal saline solution. The wound was packed with iodoform gauze, drained, and partly closed, dressed twice daily and irrigated with a solution of—

Iodin crystals	.....	gr.	1
Pot. iodid	.....	"	xv
Zinc iodid	.....	"	xv
Glycerine	.....		3iv
Aqua destillata, q. s. ad Oj			

The patient was given food of a strengthening nature, and when she was able to be out of bed, kept out of doors. In three weeks' time she had regained nearly all her lost vitality, and was brighter in appearance and disposition. The wound healed nicely, and at the end of five weeks was completely healed. Two months later a plastic operation was done and the scar tissue removed, the result being most pleasing to both patient and operator.

Case VII. The patient, a man of twenty-three, presented at the hospital with a large swelling in the submaxillary area. The jaws were tightly closed. He was unable to speak English, hence there was difficulty in obtaining a history. On pressure the swelling was exceedingly hard and painful, though no redness was present. A provisional diagnosis of a submaxillary abscess arising from an infected tooth was made. X-ray examination confirmed this diagnosis, showing that the lower right third molar was the offending tooth. The third molar was lying in a more or less impacted position butting against the second molar. The patient's temperature on admission was 102 deg. F. The following day ether was administered, and the submaxillary area opened and drained by means of a rubber tube. The pus found was streptococcic, and very foul in nature. In the attempt to open the mouth by means of a Mason gag for the purpose of removing the impacted and infected third molar, the left upper lateral incisor was completely dislodged from its socket. Owing to the great amount of trismus present, it was deemed advisable not to force the jaws apart too much, therefore the second molar was removed to give access to the deeply seated third molar, and the patient was allowed to recover from the ether. The pulp of the lateral incisor was removed, through the apical foramen, and the root-canal filled; the tooth was then laid in a 1:10,000 solution of mercury bichlorid for fifteen minutes, replaced in the socket, and ligated with a silk ligature to the adjoining teeth, twenty-three hours after displacement. The cervical margin was painted with tincture of iodine twice daily for five days, when the ligatures were changed for metal ligatures such as are used in orthodontia. Coincidentally with this treatment of the lateral incisor, the wound in the submaxillary area had healed. It responded quickly to treatment and left very little scar. At the end of three weeks the wound was entirely closed. The ligatures on the lateral incisor were removed, and the tooth was apparently solid in the socket. The patient was seen some five months later, when the lateral incisor was found to be doing excellent service, and the site of operation on the neck to be barely showing.

Case VIII. The patient, male, age forty-seven, presented at the dispensary with a parotid fistula. He had been struck in the face with a piece of metal. The face had started to swell, the eye was closed, and there was severe pain. He consulted a physician, who treated him by external applications for several days. When the patient continued to have severe pains, especially during meal hour, the attending physician decided to incise the face, and, in doing so, cut Stenson's duct, establishing a parotid fistula. Attempts at closure failed, and every time the patient smelled a savory dish he had a profuse flow of saliva over the face.

The operation for closure of the wound consisted in making an artificial duct in the mouth just above the normal opening, and connecting this with the external opening. A fine rubber tube attached to the end of a probe

was drawn from the outside wound through the cheek into the mouth and secured to the mucous membrane. The external end was cut off short so as to be inside of the facial wound, and directed upward into the duct, and the face was sutured with catgut. Dressings were applied. That night the patient suffered severe pain, and his face swelled up, almost closing the eye on the same side. In the late morning, however, the swelling subsided, and the saliva from the parotid gland commenced to flow through the rubber tube into the mouth. On the eighth day the sutures were removed from the face, and the tube was removed from inside the mouth. The face healed well, and the artificial duct continues to work satisfactory. The patient was seen two months later and expressed satisfaction, having had no recurrence of swelling or pain.

Case IX. The patient, a girl of twelve, had a chronic enlargement of the submaxillary gland. On examination intra-orally her first permanent molars were all found to be badly broken down. The root-canals of the left first permanent molar contained pus. As the gland had been in a swollen condition for several months and had been treated externally without avail, it was decided to remove it. The operation consisted in removal of the left submaxillary gland and the roots of the first molar on the same side, also of several other roots in the mouth. The socket of the left molar was well curetted. The gland on examination after removal showed a broken-down caseous condition, but was not tubercular. The patient made an uneventful recovery.

Case X. The patient, a man of forty-three years, first noticed a soreness around the upper left first and second molars. These teeth some few days afterward abscessed, and the patient had them extracted. There remained some tenderness over the superior maxillary bone for some time. About two weeks prior to coming to the hospital, a thick yellowish fluid was discharged from the left nostril. He was treated by a physician for this trouble. His face then began to appear swollen on the left side, but there was no further recurrence of discharge of pus from the nose two months after the first occurrence.

The patient's condition on admission was as follows: He was a well-formed man, his face being somewhat fuller on the left side than on the right, and tender on deep pressure over the infra-orbital foramen. Examination inside the mouth showed the gum tissue to have healed where the molars had been extracted. The left side of the palate was somewhat bulged. X-ray examination revealed an abnormal condition of the antrum, but a decision as to whether it was a sarcoma or empyema could not be arrived at. The patient was etherized, and the antrum opened through the mouth. On gaining entrance to the antrum, it was found to contain pus. There was no sign of malignancy present, so the case was treated as one of empyema. About two weeks after the operation, it was noticed one day, while irrigating the sinus, that a growth had formed. This com-

menced to grow rapidly, and a diagnosis of sarcoma of the antrum was made. The operation consisted in complete removal of the upper left jaw. The pathological report revealed spindle-celled sarcoma. Nine weeks after this operation an artificial jaw was constructed and fitted, giving the patient great comfort.

Case XI. The patient, a man of forty-seven years, presented at the dispensary with an abscessed second bicuspid. He had a history of pus flowing from his left nostril, and also running down his throat. The X-ray showed empyema of the antrum and necrosis of the alveolar process from the central incisor to the second molar. The patient was etherized, and the central lateral, both bicuspid, and first and second molars were removed. The canine had previously been extracted. The badly necrosed alveolar process was removed from the region of the third molar to the median line. The antrum was opened, curetted, thoroughly irrigated, and packed with iodoform gauze. It required over a month for this case to heal, but at the end of six weeks the tissues were in a healthy condition, and the patient was ready for a prosthetic appliance.

Case XII. This was an interesting case, illustrating the formation of secondary dentin. The patient, a little girl of thirteen years, presented with a carious upper left first molar. During the process of excavation the pulp was accidentally exposed. A dressing of Black's "1, 2, 3" preparation with one-eighth grain of cocaine was applied as a sedative, and the patient told to return in two days. She did not return before the ninth day. On opening the tooth, which had not given any trouble in the interval, a deposit of dentine had been formed over the exposed pulp. This showed up very nicely when illuminated with a mouth lamp. The new dentine was quite firm and of lighter color than the surrounding structure. The cavity was lined with cavatine, a cement step inserted, and the tooth filled with amalgam. Six months later it was still doing good service.

FRACTURED JAWS.

There were thirty-one cases of fractured jaw admitted to the clinic. Two died soon after admission, having received other injuries. With the exception of four cases in which the fragments had not been displaced at all and which were treated by the Barton bandage, the other cases were all treated by means of interdental splints. The results were most gratifying. The method of procedure in constructing a splint is too well known to necessitate a detailed description.

One case of fractured jaw had been wired by a surgeon. The wires were of silver, and passed through the body of the mandible. Necrosis followed, and, when the dental clinic was opened, the case was turned over for dental treatment. The patient was very despondent over his condition, having received the fracture three months before, and the wire operation having failed to give him anything like a firm jaw. He had an offensive discharging sinus on the outside of the face, where the incision

had been made to wire the jaw. The patient was etherized and the jaw-bone exposed, the wire and the necrotic bone were removed, and drainage inserted. The following day impressions were taken, and an interdental splint was made and applied. Six weeks later this was removed, and the patient was discharged as cured.

ARTHRITIS AND PYORRHEA.

There were many cases of arthritis which improved greatly after receiving dental attention. Nearly all cases of arthritis were accompanied by pyorrheal conditions. The treatment used in these cases consisted in thorough scaling, free use of tincture of iodine in the pockets, and finally, drying of the gums and applying scarlet red ointment to the pockets. Scarlet red ointment has a wonderful power for causing tissue to granulate. Many cases of spongy gums with pus oozing freely cleared up in a remarkably short time after this treatment.

SECONDARY HEMORRHAGE.

Several bad cases of secondary hemorrhage were treated. The worst and most stubborn was that of a man, fifty-five years of age. Bleeding commenced five days after he had had several teeth extracted under a local anaesthetic. The first attempt made to stop the bleeding consisted in packing each individual socket with tannic acid and glycerine on cotton after removing the mass of semi-coagulated blood and thoroughly irrigating the sockets with hot saline solution. This did not give any relief whatever. The patient was admitted to the ward that night bleeding profusely. Each socket was packed with plaster of Paris at 7 p.m., without any result whatever. At 11 p.m. the sockets were again packed with plaster of Paris and cotton, and a wad was placed in the mouth, the jaws were tightly closed, and a Barton bandage was applied. This gave some relief until 2 a.m., when it was necessary to change the wad in the patient's mouth, as it had become saturated with blood. The patient was given at this time 15 cc. of horse serum. At 5 a.m. he had another severe hemorrhage. Another 15 cc. of horse serum was given, and the wad changed. This seemed to control the hemorrhage for a while. Just before noon, however, the sockets were oozing again. This time the plaster of Paris was removed from the sockets, and 30 per cent. argyrol was inserted on a cotton wad, and the head bandaged. This arrested the bleeding. The patient was kept in the hospital for five days suffering from lack of strength owing to the amount of blood lost.

These are just a few of the many interesting cases met with in a hospital. The vast amount of experience obtained in a general hospital, both in dental and general medical and surgical work will more than repay the young dental graduate for the extra time spent by an internship. He will complete his term of service with confidence in himself, having acquired sound judgment and valuable practice as a diagnostician.

SUMMARY OF CASES TREATED.

From March, 1914, to April 12, 1915.

	No.
Patients treated (including return visits)	3,654
Extractions	2,319
General anaesthetics administered	932
Local anaesthetics administered	128
Permanent filling inserted	410
Gutta-percha fillings (mostly deciduous teeth)	919
Gold fillings inserted	4
Gold inlays inserted	9
Artificial dentures inserted	4
Porcelain crowns	6
Fractured jaws admitted to clinic	31
Comminuted fractures of jaws	3
Oral surgical operations	31
Alveolar abscess, acute	221
Alveolar abscess, chronic	210
Specific lesions of mouth (approximately)	6
Malignant lesions of mouth	10
Cervical adenitis cases	30
Enlarged submaxillary glands	18
Lacerations of lips	8
Pyorrhea alveolaris	115
Gingivitis cases	224
Necrosis of jaws	24
Root amputation	1
Implantation of tooth	1
Facial neuralgia	35
Facial neuralgia, alcoholic injections for same	4
Impacted teeth removed	15
Stomatitis cases	61
Epulis cases	4
Abscess of submaxillary region	18
Thrush cases	2
Pathological dentition	23
Leucoplakia	6
Ludwig's angina	1
Parotid abscess	1
Parotid fistula	1
Dentigerous cyst	2

Chancre of gum	1
Pulp stones	15
Severe secondary hemorrhage	12
Empyema of antrum	10
Supernumerary teeth	18
Fungoid pulps (approximately)	34
Ranula	2
Vincent's angina	1
Epithelioma of tongue	3
Epithelioma of palate	1
Epithelioma of cheek	1
Sarcoma of antrum	1
Case of hemophilia treated	1
Artificial jaw	1

—"Dental Cosmos."

Dental Societies

THE ONTARIO ORAL HYGIENE COMMITTEE OF THE ONTARIO DENTAL SOCIETY

Toronto, November 27th, 1916.

The annual conference of the Oral Hygiene Committee of the Ontario Dental Society was held in Toronto on November 21st.

After inspecting some new features at the Dental College, and, later, Orde St. School, the delegates were motored to the Board of Trade for luncheon.

The afternoon was spent inspecting the dental clinic and other interesting features of the military camp at the Exhibition grounds, after which the delegates all met at the Walker House for dinner.

After dinner Inspector Taylor, of St. Thomas, addressed the conference on "The Necessity of Dental Inspection in Rural Schools," emphasizing what, in his opinion, appeared to be some of the most feasible methods of introducing this reform.

The discussion on Inspector Taylor's address was opened by Dr. R. G. McLaughlin, followed by Inspector Denyes, of Milton; Inspector Smith, of Stratford; Dr. A. E. Webster, Dr. Wallace Secombe, Dr. W. E. Struthers, Toronto, and others.

The following are the names of the men who were present at the dinner: Dr. E. H. Eidt, Stratford; Dr. T. C. Trigger, St. Thomas; Dr. W. E. Struthers, Toronto; Dr. R. G. McLaughlin, Toronto; Dr. A. E. Webster, Toronto; Dr. R. J. Reade, Toronto; Ins. J. A. Taylor, M.A., St. Thomas; Dr. W. Cecil Trotter, Toronto; Dr. F. E. Bennett, St. Thomas; Dr. M. A. Ross Thomas, London; Dr. A. W. Ellis, Toronto; Dr. R. D. Thornton, Toronto; Dr. A. J. McDonagh, Toronto; Dr. N. S. Coyne, Toronto; Dr. Wallace Secombe, Toronto; Dr. H. E. Eaton, Toronto; Ins. J. Denyes, M.A., Milton; Dr. F. R. Watson, Georgetown; Dr. T. F. Perkin, Grand Valley; Dr. A. H. Mabee, Gananoque; Dr. O. Lillie, Westport; Dr. J. A. Bothwell, Stratford; Dr. C. A. Kennedy, Toronto; Dr. T. F. Campbell, Galt; Dr. R. M. Stewart, Markham; Dr. E. H. Wickware, Smith's Falls; Ins. J. H. Smith, M.A., Stratford; Ins. A. Mowat, M.A., Peterborough; Dr. R. W. Hoffman, Toronto; Dr. J. E. Middleton, Peterborough; Dr. M. A. Morrison, Peterborough; Dr. D. C. Smith, Stouffville; Dr. S. P. Reynolds, London; Dr. W. B. Amy, Toronto; Dr. J. F. Simpson, Trenton.

Dr. F. E. Bennett, St. Thomas, was unanimously elected president of the Ontario Horticultural Society for the year 1916-17

CANADIAN ARMY DENTAL CORPS, ESTABLISHMENT FOR HOME SERVICE—CANADIAN EXPEDITIONARY FORCE

The following establishment for the Canadian Army Dental Corps, Canadian Expeditionary Force, for service in Canada is authorized.

MILITIA HEADQUARTERS.

- 1 Director Dental Services, with rank of Lieut.-Colonel.
- 1 Assistant.
- 1 Quartermaster.
- 1 Clerk.
- 1 Stenographer.
- 1 Quartermaster-Sergeant.
- 1 Sergeant Mechanical Dentist.
- 1 Batman.

MILITARY DISTRICTS.

- 1 Assistant Director Dental Services for each Military District, and available for Camps of Instruction, with rank of Major.
- 1 Quartermaster.
- 1 Quartermaster-Sergeant.
- 1 Clerk.
- 1 Batman.

BATTALION ESTABLISHMENT.

Add to the establishment of each Battalion C. E. F.:

- 1 Dental Surgeon.
- 1 N. C. O. Assistant.
- 1 Batman.

Officers appointed to Home Battalions to have rank of Captain if they have practiced their profession more than two years, if under two years, the rank of Lieutenant.

OTHER UNITS.

- 1 Dental Surgeon per Artillery Brigade.
 - 1 " " " Field Ambulance.
 - 1 " " " Stationary Hospital.
 - 1 " " " General Hospital.
- Each with one N. C. O. and batman.
-

There is organized in Great Britain a Dental Teachers' Association. At its meeting in July it made bold to pass a resolution appointing a committee with the ultimate object of making known to the Medical Council their views on the teaching of mechanical dentistry.

ELECTION OF BOARD OF DIRECTORS, R.C.D.S. OF ONTARIO

The regular bi-annual nominations for the Board of Directors of the R.C.D.S. resulted in but one nomination from each electoral district in the province.

No. 1.—W. C. Davey, Morrisburg.

No. 2.—M. A. Morrison, Peterboro.

No. 3.—W. C. Trotter, Toronto.

No. 4.—Donald Clark, Hamilton.

No. 5.—W. M. McGuire, Watford.

No. 6.—H. R. Abbott, London, Ont.

No. 7.—C. E. Bean, Chesley.

Representative of the Faculty.—A. D. A. Mason.

ARMY DENTAL CLINIC, HAMILTON

Major W. G. Thompson, who is in charge of the dental clinics of No. 2 Military Division, has announced the appointments to the local clinic, which has been opened on the second floor of the Treble building, at the corner of John and King streets. Captain Hodgins will be in charge of the clinic, while Captains Thornton, Douglas and Kennedy and Lieutenant Tucker, will assist. Captain Grainger has been given charge of the clinic located in the military hospital in the east end, which consists of one chair. Captain Kennedy was formerly in the east end, where all the khaki-clad patients were looked after, until the inauguration of the new clinic in the Treble building. This latter consists of five chairs and equipment brought here from Camp Borden, and is up-to-date in every way.

Dominion Dental Journal

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3 College Street

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**All Communications relating to the Business Department of the Journal
should be addressed to the DOMINION DENTAL JOURNAL,
Richmond and Sheppard Streets, Toronto, Ontario.**

VOL. XXVIII. TORONTO, DECEMBER 15, 1916. No. 12

ANOTHER OPENING FOR WOMEN

A dental office without a lady assistant or a dental nurse is a place to be shunned. No dentist can afford to spend his time, and that of his patients, in doing the things which can be better done by a lady assistant. A dentist had better try to do without an electric engine than an assistant.

Until the technique of root canal treatment and filling reaches a higher state of perfection, more and more teeth will have to be extracted, with a consequent extension of prosthetic requirements. Besides this, the requirements of the army have long since absorbed almost all the available dental mechanics in the country, and the end is not yet. There is no good reason why women cannot do this kind of work, thus releasing more vigorous persons for the arduous duties of the war. Women might well do prosthetic dentistry for civil dentists, and, for that matter, do the work in the stationary camps. It is true it takes quite a bit of training, but, since practically all the trained men are now engaged in military dentistry, why not train women for the future?

TRAIN DENTAL ASSISTANTS, DENTAL NURSES AND DENTAL MECHANICS AT THE DENTAL COLLEGE

The purpose of the Royal College of Dental Surgeons is to serve the people, or, in other words, serve the nation. What more noble or patriotic service can any institution of learning render than to prepare young men with such skill as will make fit thousands of rejected men? The next best thing to preparing such young men is to raise their efficiency as high as possible. This can best be done by giving them trained assistants, who will easily double their capacity. The Dental College is only half serving the nation in these times of war by providing qualified dentists. It should also supply the dental officers with trained assistants and mechanics. If it is impossible to use women overseas, it is certainly not impossible to use them in the camps in Canada to do much of the clerical work, laboratory work, and assisting at the chair, now done by men who could serve in some more strenuous capacity. The Dental College is equipped to give such a training, and should set itself to the task. There is a greater difficulty in getting trained dental mechanics for the army than dentists, because of the stupid establishment of the C.A.D.C., a graduate may not act as a mechanical dentist. One dental mechanic to each officer should be changed to about one mechanic to three dentists, and a batman to each officer is another evidence of stupidity or waste energy. What does each dental officer in a concentration camp want with a batman? He might be of some service in moving about behind the lines. One well trained dental assistant would be of more help to a dental officer in serving the soldiers than five untrained batmen. Before the days of the trained hospital nurse, every physician had to act as nurse as well as physician. So it was in the army before the days of Florence Nightingale. In years gone by dentists used to fuss around in their offices doing the work of a dental assistant or nurse; such times have passed in private practice, and should pass at once in the army. If nurses are useful or essential in an army general hospital, they are doubly so in a dental hospital. Besides relieving able-bodied men for more strenuous duties of the war, women can do the work of sergeant, batman or nurse far better than men. A dentist operating with an assistant will easily double what he can accomplish alone. The war will be long, and women should be trained to serve in both civil and military dental practice. The Dental College should supply the training.

The unregistered dentists of Great Britain have been prohibited the privilege of purchasing cocaine. It would seem that any person might claim to be an unregistered dentist, and under this guise purchase the drug.

VALUE OF A DENTAL NURSE

A dental assistant, to be of greatest value to a dentist, should be a good housekeeper above all. She should know when a dental office is neat, artistic, clean and healthful. She ought to be the ballast of the office, protecting the dentist from worrying things. She should stand between the outer world and the operating room, be suitably dressed, attentive to all the varying moods of the dentist and his patients, capable of answering the telephone, making appointments and dealing with the public generally.

A dental assistant must know how to care for dental instruments, and keep the whole dental equipment in running order. The stock and up-keep of materials and instruments are in her keeping. Upon her is placed the responsibility of the asepsis of the office and all the operations. She must know what surgical cleanliness means.

All filling materials and medicines must be ready for use at all times, and ready promptly at the right time, in the right order. Cements, amalgams, dressings, impression materials, trays and gold, should be prepared and ready for use when needed.

A well-trained assistant should be capable of caring for impressions, filling and separating models, preparing wax bites, vulcanizing and finishing dentures, making gold inlays from wax models, soldering a band or making a crown.

All the business of the office should be in her hands, from meeting and finding out who patients are, to the keeping of dental and financial records, collecting accounts, paying all accounts for rent, salaries, materials, equipment, laundry, telephone, gas, heat and light.

FAILURE IN TEACHING AND PRACTICE OF SANITATION

It takes time to learn to be moderately sanitary. Sanitary science has been taught in medical schools for over thirty years in this province. Hygiene has been taught in normal and model schools for over twenty-five years. There has been a Board of Public Health for the province for almost a quarter of a century. There have been local boards for about as long a time. Hygiene has been taught in schools, hospitals, churches and homes, for years and years. Teaching hygiene in Ontario has not been effective because many of those called upon to do the teaching don't believe in the general principles of sanitation for themselves, and those who do believe in it are not allowed to carry out their ideas because those who hold the money strings do not believe in sanitation.

The common drinking cup is not permitted in railway trains and other public places, except the legislative buildings in Toronto, right under the

nose of the Provincial Board of Health. There the tin cup and the tap is good enough, except in the Assembly Chamber, where real York Springs water and a cut glass tumbler meets the sanitary requirements of those who make the laws on this important matter.

In the only public school under the direct charge of the Government there is neither medical nor dental inspection, and the common roller towel has sway for all the boys.

Many of the boards of health think they have done their full duty when they have inconvenienced the public by doing away with the drinking cup and buying a drinking fountain. Many of the drinking fountains in use are far from being sanitary, while some are worse than the common drinking cup. There are drinking fountains in use all over the country where the water to drink spouts up through water which has already fallen back from the lips of the drinker, or some previous drinker. In some of the public schools a fountain is in use which has a slow stream of water coming from the bottom of a glass cup. The children put their lips to the edge of the cup to drink. A man who was looking at this particular form of fountain for the first time, said: "Some people seem to have no sense." Boards of health send out instructions to boil the drinking water, and then the house wife washes the knives, forks and the dishes in the same water without boiling. Some stores refuse to exchange hair goods, but the same hat may be tried on forty people's heads. The roller is good enough for the customers who may not exchange a towel. Isn't it hard to have common sense about such matters?

Editorial Notes

Dr. Dunning, who has gone overseas with the C.A.D.C., has turned his practice over to Dr. Coates.



One of the most interesting addresses given at the recent Horticultural Society was that of Dr. Donald Clark, Hamilton.



A round broach is often too large to enter a flattened canal. If light^{ly} pressed in a pair of rolls, the barbs will be flattened so the broach will pass.—Dr. Trigger.



Before March 1st, 1917, twenty-two dental officers will be sent overseas from Division No. 2. We presume a proportionate number will be sent from other divisions.

ATTACHMENT OF PLANTED TEETH PHYSIOLOGICALLY UNSTABLE

The absorption of the root is the universal result of all kinds of planting of teeth in the jaws. The history, therefore, shows conclusively that the attachment is physiologically unstable. It shows further that positive chemotaxis is changed to negative chemotaxis whenever the root of the tooth, or some portion of it, has been exposed to the suppuration and has presumably absorbed products of suppurative decomposition. If we compare the conditions of the peridental membrane and the cementum in cases of replantation, and in cases where pockets have formed beside the roots of teeth, we find the conditions so similar that we may well regard them as the same. With the suppuration which has occurred and the loosening of the soft tissues, we must suppose that the integrity of the peridental membrane as such, and of its special elements which fit it for the performance of its functions, have been destroyed, and that the tissue in its place is ordinary gingival, or gum tissue, which has been modified and weakened by repeated inflammations and suppurations. Over against this is a cementum that has lost its positive chemotactic qualities by having absorbed the products of suppuration. To cap the climax of disabilities present in these cases they are placed in a field constantly exposed to active infective elements, and are constantly being reinfected. The conditions are such that these are not preventable.

When we compare the above with a fresh wound created by forming a new socket in the residual alveolar process, or by clearing a socket where a tooth has somewhat recently been extracted, we will see at once that the condition of the tissue in a socket so prepared for the reception of an implantation is in better condition to invite an adhesion of soft tissue than in any case in which the tissue has been detached by an infection alongside a root.

Under all of these adverse conditions, how shall we expect pockets to heal, reattachment of the soft tissues to the cementum to occur, and permanent cures of this condition to be made? As a matter of fact such cures do not occur, notwithstanding the reports of successes.

As I must acknowledge that in the past I was for a considerable time deceived by the appearance of betterment which followed treatment, and supposed and stated, as will be found in the article I prepared for the "American System of Dentistry," that actual cures occurred under these conditions, the above statement should not be taken as offensive by any one now in practice.

KNOWLEDGE OF HARDENING OF CALCULUS
BASIS FOR PROPHYLACTIC TEACHING

The meaning of a wider knowledge of the deposit of salivary calculus in its relation to prophylactic work can hardly be reckoned. This should stand as the basis of much of the popular teaching of prophylaxis. Our people should learn the facts in brief, substantial statements, accompanied with equally definite statements as to how to deal with them. Deposits of calculus of any degree removed twice per day—morning and evening—will do no harm whatever to the gingivae, or to the teeth. All people, with but a few exceptions, should be able to so conduct their food habits that no deposits of calculus would occur; or, by cleaning after each meal, calculus may be prevented from doing harm to the tissues.

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